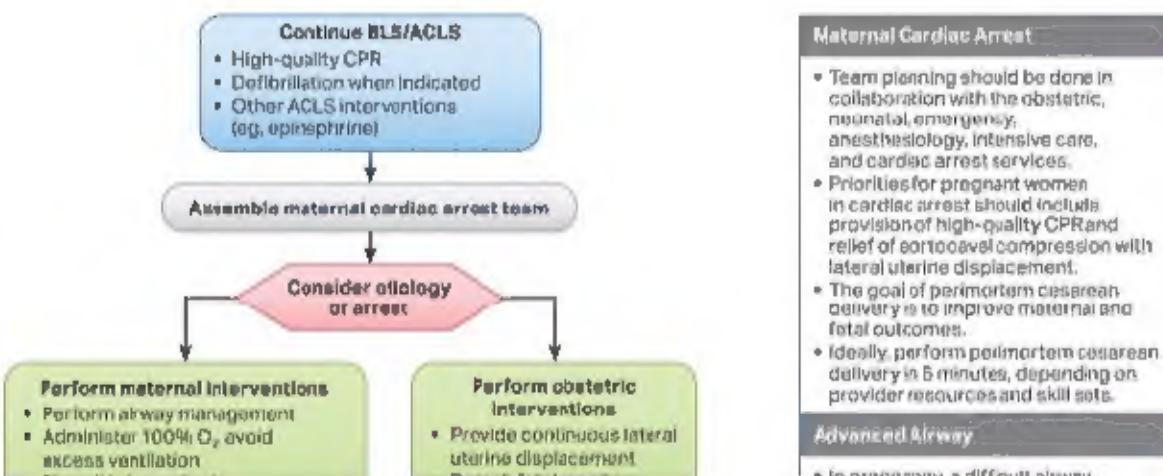


## CARDIAC ARREST ASSOCIATED WITH PREGNANCY

### Cardiac Arrest in Pregnancy In-Hospital ACLS Algorithm

The treatments listed in the Cardiac Arrest in Pregnancy In-Hospital ACLS Algorithm include recommendations for defibrillation, medications, and intubation. The algorithm is divided into 2 focuses (maternal interventions and obstetric interventions) to reflect the simultaneous resuscitation interventions of both the maternal resuscitation team and the obstetrical/neonatal team to improve team performance, efficiency, and success.

#### Cardiac Arrest in Pregnancy In-Hospital ACLS Algorithm



PREVIOUS

1 2 3 4 5

NEXT

CHALLENGE US



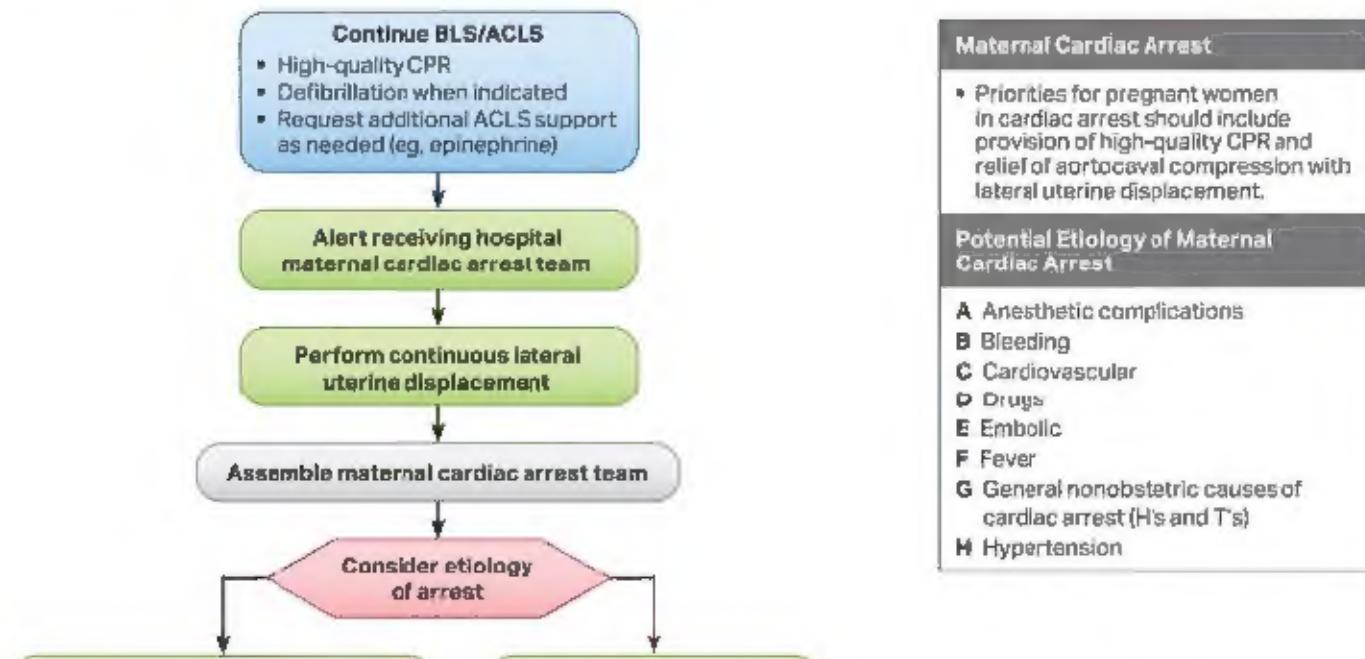
## CARDIAC ARREST ASSOCIATED WITH PREGNANCY



### Cardiac Arrest in Pregnancy Out-of-Hospital Algorithm

The Cardiac Arrest in Pregnancy Out-of-Hospital Algorithm is a BLS version.

#### Cardiac Arrest in Pregnancy Out-of-Hospital ACLS Algorithm



PREVIOUS

1

2

3

4

5

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

What is the recommended CPR position for a third-trimester gravid patient?

CHOOSE THE CORRECT ANSWER

Trendelenburg position

On a backboard tilted at a 30° angle

Supine with manual left lateral uterine displacement

Left-lateral decubitus position

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

82%

PROGRESS: HeartCode ACLS 2025

2h 34m left

TT Ahmed Othman

What is the recommended CPR position for a third-trimester gravid patient?

Not there yet...

 Your Answer

Left-lateral decubitus position

Correct Answer

Supine with manual left lateral uterine displacement

Learn more here:  Cardiac Arrest Associated With Pregnancy



I Know It.

CHALLENGE US

NEXT

What alterations are recommended for resuscitation drug administration to third-trimester gravid patients in cardiac arrest?

CHOOSE THE CORRECT ANSWER

No dosing alterations are recommended

Resuscitation drugs are not recommended

Double the dose

Reduce the dose by half

 I KNOW IT

 THINK I KNOW IT

 NOT SURE

 NO IDEA

82% PROGRESS: HeartCode ACLS 2025

2h 35m left

TT Ahmed Othman

What alterations are recommended for resuscitation drug administration to third-trimester gravid patients in cardiac arrest?

You got it!

✓ Your Answer

No dosing alterations are recommended



I Know It

CHALLENGE US

NEXT

When should resuscitation Team Leaders activate the protocol for perimortem cesarean delivery?

CHOOSE THE CORRECT ANSWER

When the patient develops asystole

When the patient remains unresponsive to 2 epinephrine doses

When the maternal resuscitation attempt is deemed futile

As soon as cardiac arrest is identified in a pregnant patient

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

When should resuscitation Team Leaders activate the protocol for perimortem cesarean delivery?

You got it!



As soon as cardiac arrest is identified in a pregnant patient



CHALLENGE US

NEXT

How quickly should resuscitation Team Leaders consider perimortem cesarean delivery after beginning resuscitative efforts if return of spontaneous circulation has not been achieved?

CHOOSE THE CORRECT ANSWER

10 minutes

15 minutes

5 minutes

8 minutes

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

83%

PROGRESS: HeartCode ACLS 2025

~2h 30m left

TT Ahmed Othman

How quickly should resuscitation Team Leaders consider perimortem cesarean delivery after beginning resuscitative efforts if return of spontaneous circulation has not been achieved?

You got it!

✓ Your Answer

5 minutes

CHALLENGE US

NEXT

o

I Know It

# OPTIMAL OXYGENATION AND VENTILATION IN THE POST-CARDIAC ARREST PERIOD



## The Adult Post-Cardiac Arrest Care Algorithm

The Adult Post-Cardiac Arrest Care Algorithm outlines the steps to immediately assess and manage post-cardiac arrest patients with ROSC. Team members must continue to maintain good ventilation and oxygenation with a bag-mask device or advanced airway and use the Hs and Ts to recall conditions that may have contributed to the cardiac arrest.

### Optimize Ventilation and Oxygenation

After ROSC is obtained, the Adult Post-Cardiac Arrest Care Algorithm directs you to ensure an adequate airway and support breathing immediately after ROSC. An unconscious/unresponsive patient requires an advanced airway to mechanically support breathing.

- Use continuous quantitative waveform capnography to confirm and monitor correct placement of the ET tube
- Use the lowest inspired oxygen concentration that will maintain arterial oxyhemoglobin saturation of 92% to 98%. When titrating inspired oxygen is not feasible (eg, in an out-of-hospital setting), it is reasonable to use 100% oxygen until the patient arrives at the emergency department
- Avoid excessive ventilation of the patient (do not ventilate too fast or too much). You may begin ventilation at 10/min and adjust to achieve a  $\text{PaCO}_2$  of 35 to 45 mm Hg.

To avoid hypoxia in adults with ROSC after cardiac arrest, you may use the highest available oxygen concentration until you can measure the arterial oxyhemoglobin saturation or the partial pressure of arterial oxygen if the appropriate equipment is available. Decrease the fraction of inspired oxygen ( $\text{FiO}_2$ ) when oxyhemoglobin saturation is 100% if you can maintain the oxyhemoglobin saturation at 92% to 98%.

1

2

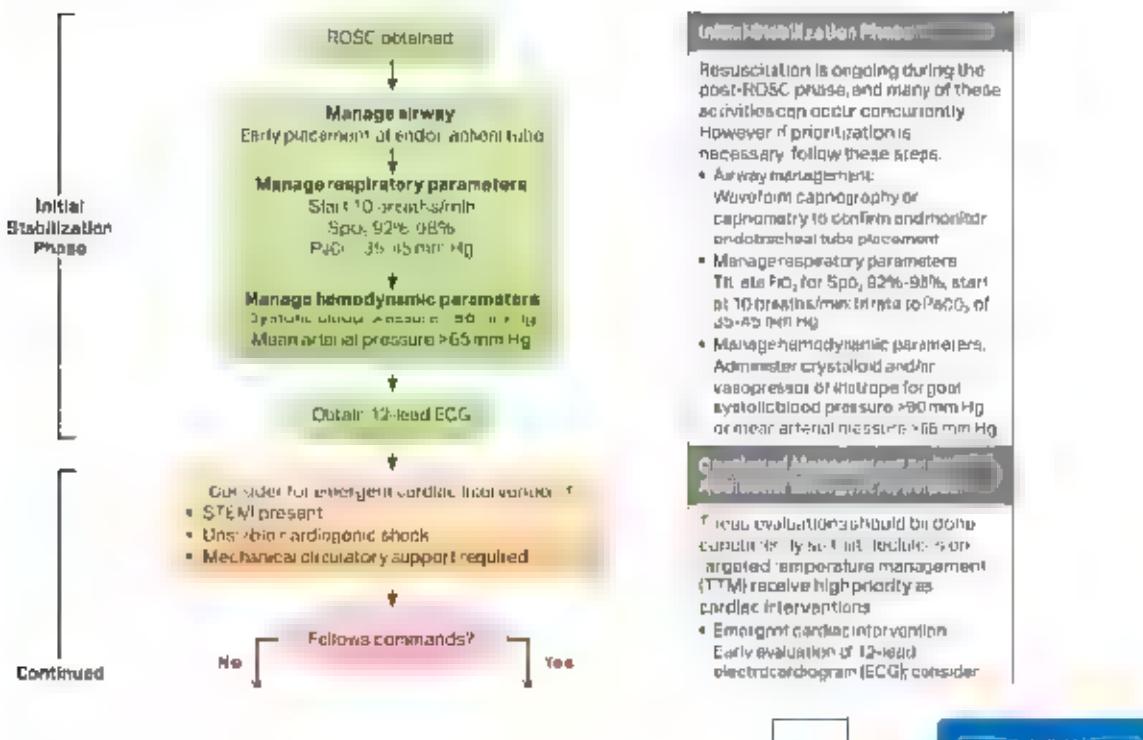
NEXT

## OPTIMAL OXYGENATION AND VENTILATION IN THE POST-CARDIAC ARREST PERIOD

saturation is 100% if you can maintain the oxyhemoglobin saturation at 92% to 98%

Because an oxygen saturation of 99% or greater may correspond to a  $\text{PaCO}_2$  between approximately 145 and 500 mm Hg, in general, it is appropriate to wean  $\text{FlO}_2$  for a saturation of 98% or greater to avoid hyperoxia as long as the patient can maintain oxyhemoglobin saturation of 92% to 98%

### Adult Post-Cardiac Arrest Care Algorithm



## OPTIMAL OXYGENATION AND VENTILATION IN THE POST-CARDIAC ARREST PERIOD

### Quantitative Waveform Capnography

ETCO<sub>2</sub> is the concentration of carbon dioxide in exhaled air at the end of expiration, typically expressed as a partial pressure in mm Hg (millimeters of mercury). There are 2 types of capnography devices:

- Mainstream measures the CO<sub>2</sub> directly on the airway and sends the signal back to the device to display.
- Sidestream samples the gas from the airway and measures the CO<sub>2</sub> within the device. Because CO<sub>2</sub> is a trace gas in atmospheric air, CO<sub>2</sub> that capnography detects in exhaled air is produced in the body and delivered to the lungs by circulating blood.

Cardiac output is the major determinant of CO<sub>2</sub> delivery to the lungs. If ventilation is relatively constant, PETCO<sub>2</sub> correlates well with cardiac output during CPR.

Observe a persistent capnographic waveform with ventilation to confirm and monitor ET tube placement in the field, in the transport vehicle, on arrival at the hospital, and after any patient transfer to reduce the risk of unrecognized tube misplacement or dislodgement.

Although researchers have not studied capnography to confirm and monitor correct placement of supraglottic airways (e.g., aryngaeal mask airway, laryngeal tube, or esophageal-trachea tube), effective ventilation through a supraglottic airway device should result in a capnography waveform during CPR and after ROSC.

A. Normal range of 35 to 45 mm Hg

PREVIOUS

1

2

UNKNOWN

KNOWLEDGE

SKILL

DONT GET IT

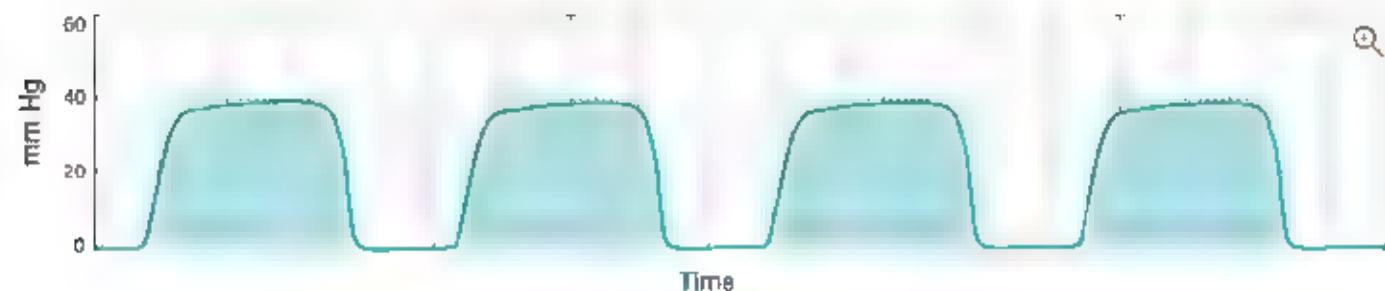
CHALLENGE US



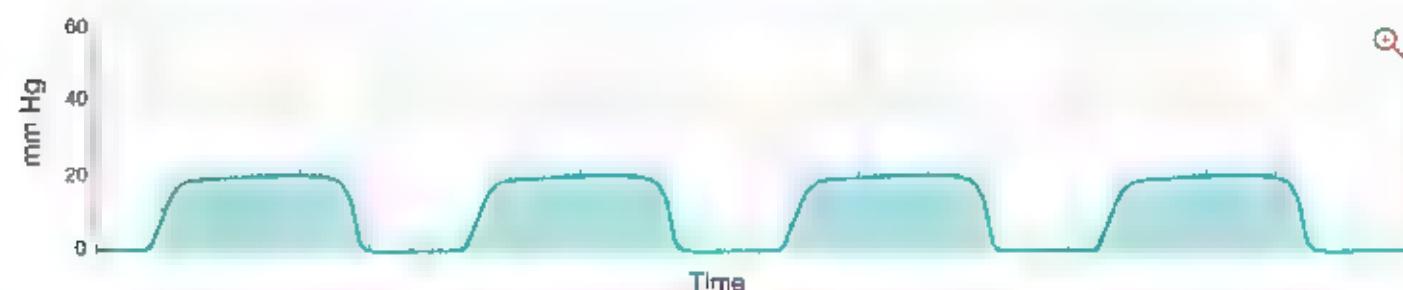
## OPTIMAL OXYGENATION AND VENTILATION IN THE POST-CARDIAC ARREST PERIOD

Although researchers have not studied capnography to confirm and monitor correct placement of supraglottic airways (e.g. arygeal mask airway, laryngeal tube, or esophageal trachea tube), effective ventilation through a supraglottic airway device should result in a capnography waveform during CPR and after ROSC.

A. Normal range of 35 to 45 mm Hg



B. 20 mm Hg



PREVIOUS

1

2

I KNEW

I GOT IT NOW

THINK I GOT IT

I DON'T GET IT

When titrating inspired oxygen, which arterial oxyhemoglobin saturation value lies within the recommended range for a patient who achieves return of spontaneous circulation?

CHOOSE THE CORRECT ANSWER

90%

95%

88%

99%

**KNOWLEDGE**

**CONFIDENCE**

**SKILL**

**NO IDEA**

84% PROGRESS: HeartCode ACLS 2025

TT Ahmed Othman

2h 28m 45s

When titrating inspired oxygen, which arterial oxyhemoglobin saturation value lies within the recommended range for a patient who achieves return of spontaneous circulation?

You got it!

 Your Answer 95%

CHALLENGE US

NEXT



Review

When adjusting ventilation rates, which  $\text{PETCO}_2$  value lies within the recommended range for a patient who achieves return of spontaneous circulation?

CHOOSE THE CORRECT ANSWER

55 mm Hg

30 mm Hg

40 mm Hg

20 mm Hg

I KNOW IT

THINK I KNOW IT

NOT SURE

NOT IDEA

84%

PROGRESS HeartCode ACLS 2025

2h 25m left

TT Ahmed Othman

When adjusting ventilation rates, which  $\text{PaCO}_2$  value lies within the recommended range for a patient who achieves return of spontaneous circulation?

You got it!

✓ Your Answer

40 mm Hg



Know it

CHALLENGE US

NEXT

## OPTIMAL HEMODYNAMIC STATUS

### **Treat Hypotension (SBP Less Than 90 mm Hg)**

To treat hypotension when SBP is less than 90 mm Hg, obtain IV access if not already established, and verify that any V lines are open. Continue ECG monitoring after ROSC during transport, and throughout ICU care until deemed clinically not necessary. At this stage, consider treating any reversible causes that might have precipitated the cardiac arrest but persist after ROSC.

Treat hypotension as follows:

- **IV bolus:** 1 to 2 L normal saline or lactated Ringer's solution
- **Norepinephrine:** 0.1 to 0.5 mcg/kg per minute in 70 kg adult, 7 to 35 mcg per minute. IV infusion adjusted to achieve a minimum SBP of greater than 90 mm Hg or a mean arterial pressure of greater than 65 mm Hg. Norepinephrine (levvorenone), a naturally occurring potent vasoconstrictor and inotropic agent, may be effective for managing patients with severe hypotension (e.g. SBP less than 70 mm Hg), and a low total peripheral resistance who do not respond to less potent adrenergic drugs such as dopamine, phenylephrine, or methoxamine.
- **Epinephrine:** 2 to 10 mcg per minute IV infusion adjusted to achieve a minimum SBP of greater than 90 mm Hg or a mean arterial pressure of greater than 65 mm Hg. Epinephrine can be used in patients who are not in cardiac arrest but who require inotropic or vasopressor support.
- **Dopamine:** 5 to 20 mcg/kg per minute IV infusion adjusted to achieve a minimum SBP of greater than 90 mm Hg or a mean arterial pressure of greater than 65 mm Hg. Dopamine hydrochloride is a catecholamine-like agent and a chemical precursor of norepinephrine that stimulates the heart through both  $\alpha$ - and  $\beta$ -adrenergic receptors.

 **NEW** **FOR YOU** **TOP PRIORITY** **DON'T GET IT****CHALLENGE US**

85%

PROGRESS: HeartCode ACLS 2025

2h 19m left

TT Ahmed Othman

What is the recommended fluid bolus dose for patients who are hypotensive during the post-cardiac arrest phase?

CHOOSE THE CORRECT ANSWER

3 to 4 L

1 to 2 L

10 mL/Kg

20 mL/Kg

 **I KNOW IT**

 **I'M SICK**

 **I DON'T KNOW**

 **NO IDEA**

85% PROGRESS HeartCode ACS 2025

2h 19m left

TT Ahmed Othman

What should be done immediately in a patient who is hypotensive during the pre-hospital arrest phase?

You got it!

Your Answer 1 to 2 L



Correct

CHALLENGE US

NEXT

85%

PROGRESS HeartCodeACLS 2025

TT Ahmed Othman

21-19m 8

What is the recommended norepinephrine dose for hypotensive patients during the prehospital care phase?

CHOOSE THE CORRECT ANSWER

0.6 to 1.0 mcg/kg per minute

0.01 to 0.05 mcg/kg per minute

0.06 to 0.09 mcg/kg per minute

0.1 to 0.5 mcg/kg per minute

KNOW IT

UNKNOWN

NOT SURE

NO IDEA

85% PROGRESS HeartCode ACLS 2025

1h 19m left

TT Ahmed Othman

What is the recommended norepinephrine dose for hypotensive patients during the post-cardiac arrest phase?

You got it!

✓ Your Answer

0.1 to 0.5 mcg/kg per minute

CHALLENGE US

NEXT



Know It

What is the recommended starting IV infusion dose of epinephrine for patients in cardiac arrest who achieve ROSC and need vasopressor support?

CHOOSE THE CORRECT ANSWER

2 to 10 mcg per minute

1 to 4 mcg/kg per minute

10 to 20 mcg per minute

2 to 5 mcg/kg per minute

 KNOW IT

 I DON'T KNOW

 DON'T

 NO IDEA

86%

PROGRESS HeartCode ACLS 2025

2h 14m left

TT Ahmed Othman

What is the recommended starting IV infusion dose of epinephrine for patients in cardiac arrest who achieve ROSC and need vasopressor support?

You got it!

✓ Your Answer

2 to 10 mcg per minute



I know +

CHALLENGE US

NEXT

What is the mean arterial pressure target when administering epinephrine to patients in cardiac arrest who achieve return of spontaneous circulation and need resuscitation support?

CHOOSE THE CORRECT ANSWER

55 mm Hg

65 mm Hg

70 mm Hg

75 mm Hg



86%

PROGRESS: HeartCode ACLS 2025

TT Ahmed Othman

What is the mean arterial pressure target when administering epinephrine to patients in cardiac arrest who achieve return of spontaneous circulation and no vasopressor support?

You got it!

 Your Answer

65 mm Hg



Know it

CHALLENGE JS

INQ

## IMPORTANCE OF EARLY ACQUISITION OF 12-LEAD ECG

Treat the precipitating cause of cardiac arrest after ROSC and intubate or request studies that will further help evaluate the patient. You must identify and treat any cardiac arrhythmias, electrolyte, toxicologic, pulmonary, and neurologic precipitants of arrest. Overall, the most common cause of cardiac arrest is cardiovascular disease and associated coronary ischemia, so obtain a 12-lead ECG as soon as possible to detect ST-segment elevation or left bundle branch block.

### Coronary Angiography

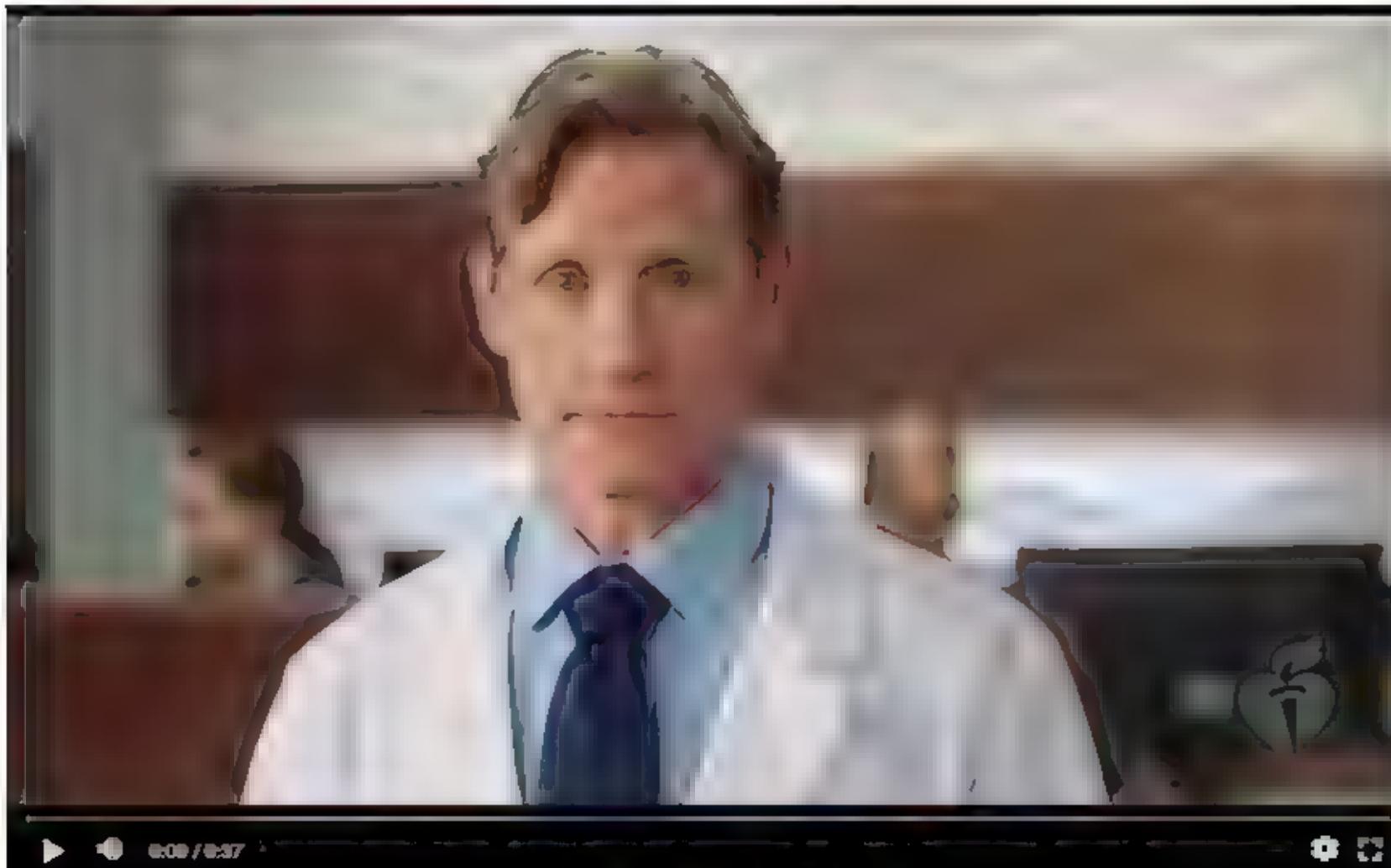
Perform coronary angiography right away (rather than later in the hospital stay or not at all) for OHCA patients with suspected cardiac etiology of arrest and ST-segment elevation on ECG. When you highly suspect acute myocardial infarction (AMI), activate local protocols for treatment and coronary reperfusion. Coronary angiography, if indicated, can be beneficial in post-cardiac arrest patients regardless of whether they are awake or comatose. It is unclear whether emergent coronary angiography is beneficial for post-cardiac arrest patients without STEM.

### Expert Consultation

In the absence of evidence identifying the optimal timing for coronary angiography and PCI in post-cardiac arrest patients suspected of having acute coronary syndromes as the cause of their cardiac arrest but without ST-segment elevation, an interventional cardiologist should be consulted for each patient to determine timing of angiography and PCI based on local protocols. Concurrent PCI and TTM are safe, with good outcomes reported for some comatose patients who have undergone PCI.

## IMPORTANCE OF EARLY ACQUISITION OF 12-LEAD ECG

STEMI Present or High Suspicion of AMI



PREVIOUS

1

2

UNKNOWN

UNKNOWN

UNKNOWN

UNKNOWN

87%

PROGRESS Hear Code ACLS 2015

2h 8m left

TT Ahmed Othman

What is the purpose of obtaining a 12-lead electrocardiogram early during the prehospital phase?

CHOOSE THE CORRECT ANSWER

To establish a baseline for future comparison

To identify a life-threatening arrhythmia

To evaluate the need for a pacemaker

To detect ST-segment elevation or left bundle branch block



87%

PROGRESS HeartCode ACS 2025

TT Ahmed Othman

What is the purpose of obtaining a 12-lead electrocardiogram early during the resuscitation phase?

You got it!

✓  
Your  
Answer

To detect ST-segment elevation or left bundle branch block

CHALLENGE US

NEXT



know it

During the post-cardiac arrest care period, the 12-lead electrocardiogram reveals an ST-segment elevation myocardial infarction.

Which step has the highest priority?

CHOOSE THE CORRECT ANSWER

Evaluate the patient's ability to follow verbal commands

Obtain computed tomographic imaging

Intensive care unit/critical care unit admission

Coronary angiography

 **KNOWLEDGE**

 **KNOWLEDGE**

 **KNOWLEDGE**

 **NO IDEA**

During the post-cardiac arrest care period, the 12-lead electrocardiogram reveals an ST-segment elevation myocardial infarction.

Which step has the highest priority?

You got it!

Your Answer

Coronary angiography



Know it

CHALLENGE US

NEXT

## IMPORTANCE OF RAPID DELIVERY TO THE CATHETERIZATION LABORATORY AFTER ACHIEVING ROSC FOR PATIENTS WITH STEMI

The EMS team transports the patient to an emergency department (ED) or cardiac catheterization laboratory before the patient is transferred to an ICU for continued care. In contrast, patients who are already in the hospital depend on a professional system of appropriate surveillance and prevention of cardiac arrest. Reperfusion therapy opens an obstructed coronary artery with either mechanical means or drugs. Percutaneous coronary intervention (PCI) performed in the cardiac catheterization laboratory after coronary angiography allows balloon dilation and/or stent placement for an obstructed coronary artery.

### Coronary Reperfusion

Begin aggressive treatment including coronary reperfusion with PCI if you detect an ST-segment elevation myocardial infarction (STEMI) after ROSC, regardless of coma or targeted temperature management (TTM). In cases of out-of-hospital STEMI, provide advance notification to receiving facilities.



CHALLENGE US

What is an advantage of primary percutaneous coronary intervention (PCI) catheterization laboratory for patients with cardiogenic shock and coronary artery occlusion once they achieve return of spontaneous circulation?

CHOOSE THE CORRECT ANSWER

It improves brain recovery in comatose patients

It eliminates the need for mechanical ventilation

It reduces the need for narcotic analgesics

It restores blood flow in an infarction-related artery

UNKNOWN

KNOWLEDGE

CONFIDENT

NO IDEA

88%

PROGRESS: HeartCode ACLS 2025

2h 2m left

TT Ahmed Othman

What is an advantage of primary percutaneous coronary intervention in a catheterization laboratory for patients with cardiac arrest secondary to coronary artery occlusion once they achieve return of spontaneous circulation?

You got it!

 Your Answer

It restores blood flow in an infarction-related artery



Know it

CHALLENGE US

NEXT

## TARGETED TEMPERATURE MANAGEMENT

### Targeted Temperature Management

TTM is the only intervention demonstrated to improve neurologic recovery after cardiac arrest. The optimal duration of TTM is at least 24 hours, and although comparative studies of the duration of TTM have not been performed in adults, hypothermia for up to 72 hours was used safely in newborns.

During TTM, monitor the patient's core temperature by using an esophageal thermometer, bladder catheter in nonanuric patients, or a pulmonary artery catheter if one is already in place for other indications. Axillary, oral, and rectal temperatures do not adequately measure core temperature changes.

TTM should not affect the decision to perform PCI, because concurrent PC and hypothermia are reported to be feasible and safe.

Brain injury and cardiovascular instability are the major factors that determine survival after cardiac arrest. Because TTM is currently the only intervention demonstrated to improve neurologic recovery, consider TTM for any patient who is comatose and unresponsive to verbal commands after ROSC.

1 2 **NEXT**

CHALLENGE US 

## TARGETED TEMPERATURE MANAGEMENT

### Targeted Temperature Ranges

For TTM, healthcare providers should select and maintain a constant target temperature between 32°C and 36°C for at least 24 hours. Although the optimal method of achieving the target temperature is unknown, any combination of rapid infusion of cold, isotonic, non-glucose-containing fluid (30 mL/kg), endovascular catheters, surface cooling devices, or simple surface interventions (e.g., ice bags) appears to be safe and effective.

Specific patient features may necessitate selecting one temperature over another for TTM. Higher temperatures might be preferable in patients for whom lower temperatures convey some risk (e.g., bleeding) and lower temperatures might be preferable when patients have clinical features that worsen at higher temperatures (e.g., seizures, cerebral edema). Of note, temperature control between 32°C and 36°C is not contraindicated in any patients, so all patients who require intensive care are eligible.

In the prehospital setting, do not routinely cool patients after ROSC with rapid infusion of cold IV fluids. Current evidence indicates no direct outcome benefit from these interventions, and IV fluid administration in the prehospital setting may increase pulmonary edema and re-arrest. We don't yet know whether different methods or devices for temperature control outside of the hospital are beneficial.

PREVIOUS

1

2



CHALLENGE US



- During the post-cardiac arrest care phase, your team has optimized the patient's oxygenation, ventilation, and hemodynamic status.
- The patient's 12-lead electrocardiogram identifies an ST-segment elevation myocardial infarction, and the patient is being prepped for transport to the catheterization laboratory to undergo coronary reperfusion therapy.

Why is it important to assess the patient's ability to follow commands?

CHOOSE THE CORRECT ANSWER

To prepare the critical care unit for the patient's arrival

To select the most appropriate reperfusion strategy

To determine the need for targeted temperature management

To determine the need for anesthesia in the catheterization laboratory

KNOW IT

KNOW IT

KNOW IT

KNOW IT

- During the post-cannulation care phase, your team has optimized the patient's oxygenation, ventilation, and hemodynamic status.
- The patient's 12-lead electrocardiogram identifies an ST-segment elevation myocardial infarction, and the patient is being prepped for transport to the catheterization laboratory to undergo coronary reperfusion therapy.

Why is it important to assess the patient's ability to follow commands?

 Your Answer

To determine the need for targeted temperature management



Know it

CHALLENGE US

NEXT

If the patient is not following commands with rectified temperature, the patient can be cooled as possible with whole body cooled temperature range:

CHOOSE THE CORRECT ANSWER

30°C to 32°C

28°C to 30°C

36°C to 38°C

32°C to 36°C

UNKNOWN

UNKNOWN

NO IDEA

89%

PROGRESS HeartCode ACLS 2025

2h 58m 18s

TT Ahmed Othman

If the patient is not following commands, start targeted temperature management as soon as possible with what targeted temperature range?

You got it!

 Your Answer

32°C to 36°C



KNOW IT

CHALLENGE US

NEXT

## MOST COMMON REVERSIBLE CAUSES (H'S AND T'S)

The H's and T's are a memory aid for potential reversible causes of hemodynamic instability during post-cardiac arrest care

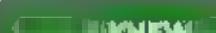
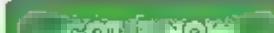
### H's

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia

### T's

- Tension pneumothorax
- Tamponade (cardiac)
- Toxins
- Thrombosis (pulmonary)
- Thrombosis (coronary)

Hypovolemia and hypoxia are the 2 most common underlying and potentially reversible causes of PEA. Look for evidence of these problems as you assess the patient

I KNOWCONFIRMPRACTICEDON'T GET IT

90%

PROGRESS HeartCode ACS 2025

40 - 200 sec

TT Ahmed Othman

In addition to hypovolemia, what is the most common underlying, potentially reversible cause of pulseless electrical activity?

CHOOSE THE CORRECT ANSWER

Hypothermia

Thrombosis

Tension pneumothorax

Hypoxia

DKNOWLEDGE

CONFIDENT KNOWLEDGE

CONFIDENT

NO IDEA

In addition to hypovolemia, what is the most common underlying/potentially reversible cause of pulseless electrical activity?

You got it!

✓ Your Answer

Hypoxia



Know it

CHALLENGE US

NEXT

## APPROPRIATE DESTINATION FOR A PATIENT IN THE POST-CARDIAC ARREST PERIOD

Critical care facilities that treat patients after cardiac arrest should use a comprehensive care plan that includes acute cardiovascular interventions, use of TTM, standardized medical goal-directed therapies, and advanced neurologic monitoring and care.

Determining neurologic prognosis is inaccurate during the first 72 hours after resuscitation in patients not treated with TTM. For those treated with TTM, you should wait 72 hours after the patient returns to normothermia. Prognostication using clinical examination may be confounded by sedation or paralysis, so these factors must be considered carefully before considering a withdrawal of life-sustaining therapy on the basis of neuroprognostication. Many initially comatose survivors of cardiac arrest have the potential for full recovery, so it is important to place patients in a hospital critical care unit where experts can perform neurologic evaluation and appropriate testing to aid prognosis in a timely manner.

### Advanced Critical Care

After coronary reperfusion interventions, or if the post-cardiac arrest patient has no ECG evidence or suspicion of myocardial infarction, the high-performance team should transfer the patient to an ICU.

OK NEWOKDON'T GETDON'T GET IT

CHALLENGE US



91%

PROGRESS HeartCode ACLS 2025

1h 47m left

TT Ahmed Othman

What is the recommended destination for a post-cardiac arrest patient who is currently in asystole and in need of preoxygenation and temperature management?

CHOOSE THE CORRECT ANSWER

Medical surgical unit

Telemetry unit

Intensive care unit

Emergency department

UNKNOWN

CONFIDENTIAL

PROBABLY

NO IDEA

91% PROGRESS: HeartCode ACLS 2025

TT Ahmed Othman

What is the recommended destination for a post-cardiac arrest patient after coronary reperfusion and initiation of targeted temperature management?

You got it!

 Your Answer

Intensive care unit



Know it

CHALLENGE US

NEXT

What is an advantage of placing a post-cardiac arrest patient in a critical care bed after coronary reperfusion interventions?

CHOOSE THE CORRECT ANSWER

The patient can receive titrated oxygen therapy

Access by family members is easier

Experts can perform timely neurological evaluation

Targeted temperature management occurs there

KNOWN

UNKNOWN

UNKNOWN

NO IDEA

What is an advantage of placing a post-cardiac arrest patient in a critical care bed after coronary reperfusion and resuscitation?

Not there yet.



Your Answer

Targeted temperature management occurs there

Correct Answer

Experts can perform timely neurologic evaluation

Learn more here:  Appropriate Destination for a Patient in the Post-Cardiac Arrest Period



Know it

CHALLENGE US

NEXT

## FACTORS INVOLVED WITH NEUROPROGNOSTICATION AFTER ROSC

### Neuroprognostication

Accurate neurologic prognostication is important to avoid inappropriate withdrawal of life-sustaining treatment in patients who may otherwise achieve meaningful neurologic recovery and also to avoid ineffective treatment when poor outcome is inevitable.

Neuroprognostication relies on interpreting the results of diagnostic tests and correlating those results with outcome. Given that a false-positive test result for poor neurologic outcome could lead to inappropriate withdrawal of life support from a patient who otherwise would have recovered, the most important test characteristic is specificity. Many of the tests considered are subject to error due to the effects of medications, organ dysfunction, and temperature. Furthermore, many research studies have methodologic limitations, including small sample sizes, single-center design, lack of blinding, the potential for self-fulfilling prophecies, and the use of outcome at hospital discharge rather than a time point associated with maximal recovery (typically 3 to 6 months after arrest).

Because any single method of neuroprognostication has an intrinsic error rate and may be subject to confounding, multiple modalities should be used to improve decision-making accuracy.

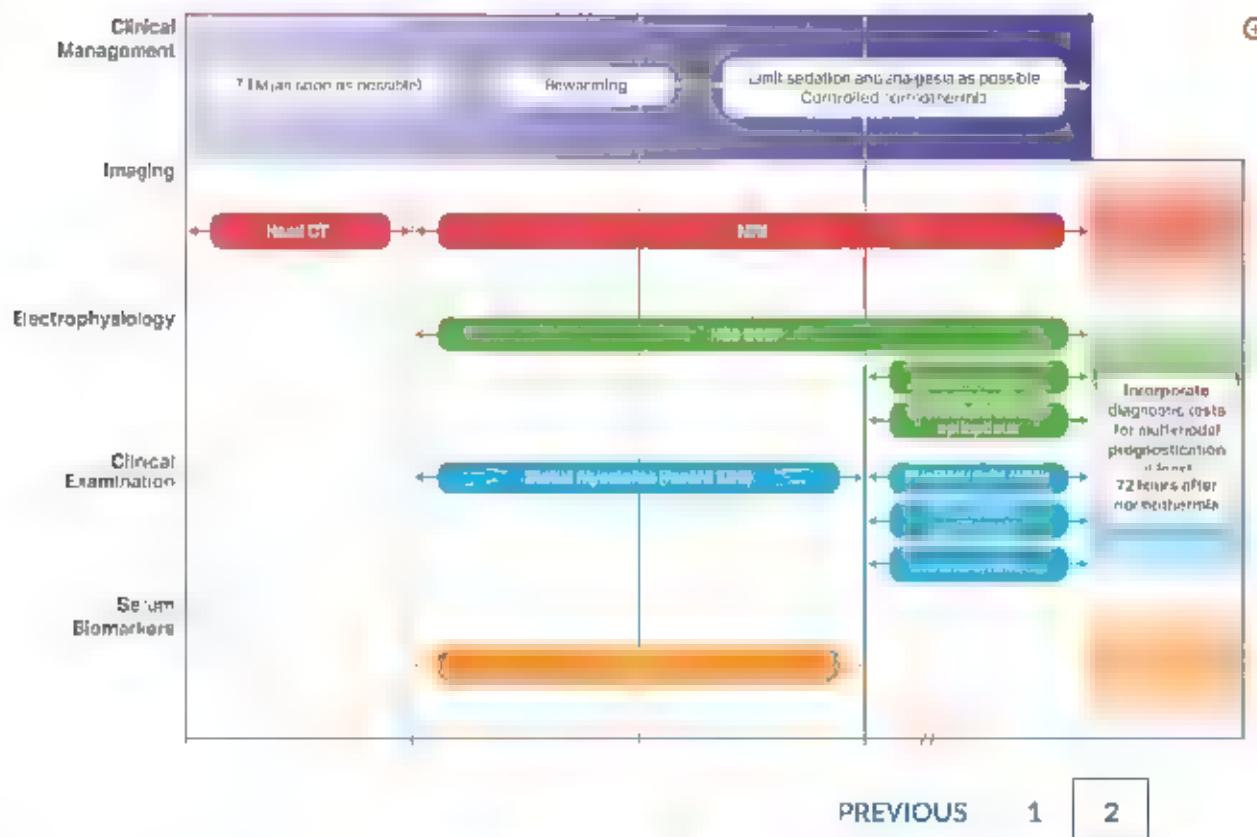
1 2 

CHALLENGE US 

# FACTORS INVOLVED WITH NEUROPROGNOSTICATION AFTER ROSC



## Neuroprognostication Diagram

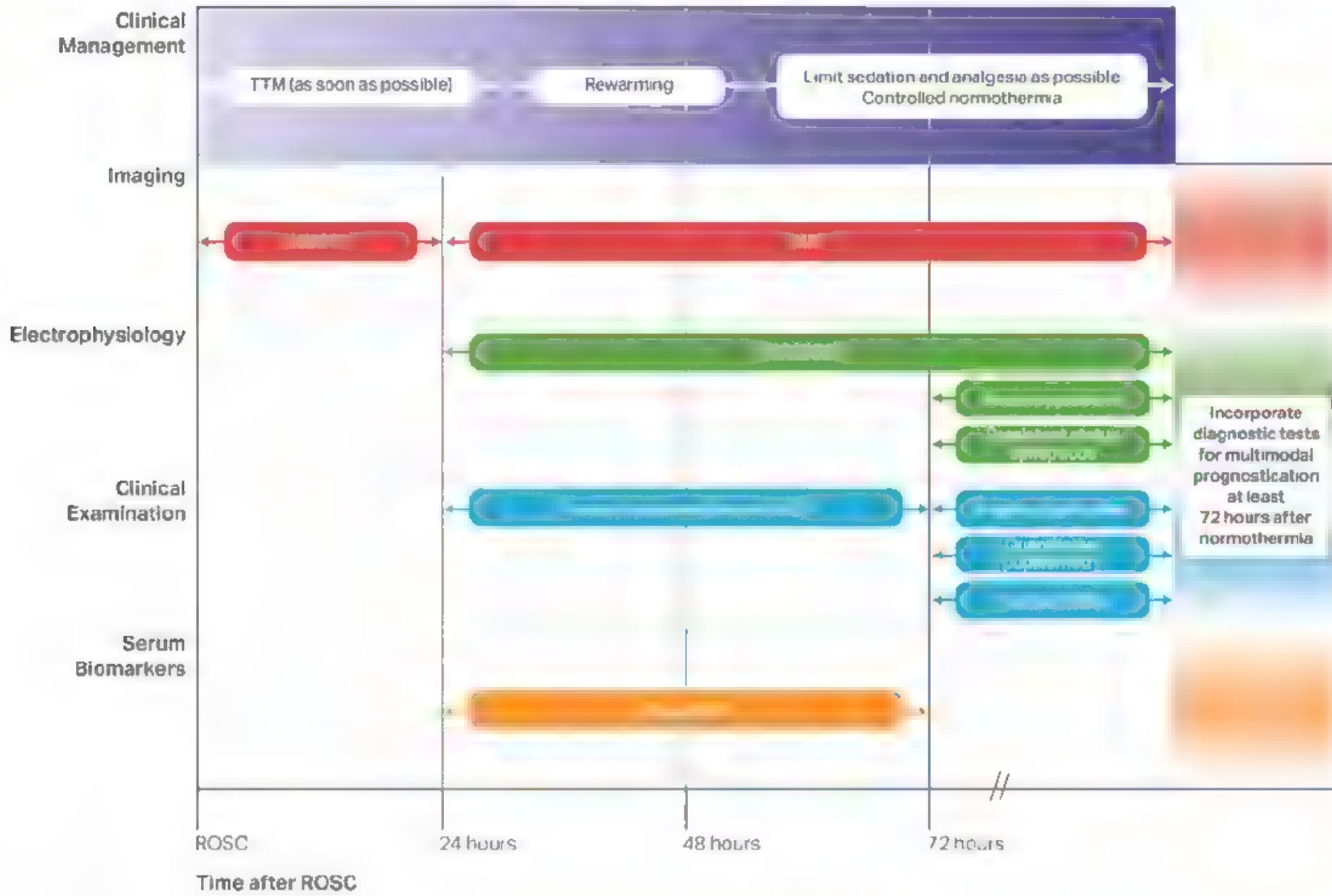


OK NEW

OK NEW

OK NEW

DON'T GET IT



Which factor can confound neuroprognostication during the post-cardiac arrest phase?

CHOOSE THE CORRECT ANSWER

Serum glucose levels

Oxygen saturation values

Hemoglobin and hematocrit levels

Targeted temperature management



Which factor can confound neuroprognostication during the post-cardiac arrest phase?

You got it!



Your Answer

Targeted temperature management



Know it

CHALLENGE US

NEXT

92% PROGRESS HeartCode ACLS 2025

1h 42m left

TT Ahmed Othman

How long should you wait to determine the neurologic prognosis of a patient treated with targeted temperature management after the patient's return to normothermia?

CHOOSE THE CORRECT ANSWER:

48 hours

12 hours

72 hours

24 hours

 KNOW IT

 UNKNOWN

 GUESS

 NO IDEA

92%

PROGRESS: HeartCode ACLS 2025

1h 42m left

TT Ahmed Othman

How long should you wait to determine the neurologic prognosis of a patient treated with targeted temperature management after the patient returns to normothermia?

You got it!

✓ Your Answer

72 hours

CHALLENGE US

NEXT



Know it

92%

PROGRESS HeartCode ACLS 2025

1h 42m left

TT Ahmed Othman



### Introduction

Your ALS team is dispatched for a 70-year-old woman who suddenly collapsed while on her morning jog. Bystander CPR was performed, and the patient did not respond to initial BLS, including initial defibrillation with an AED. The scene is safe.

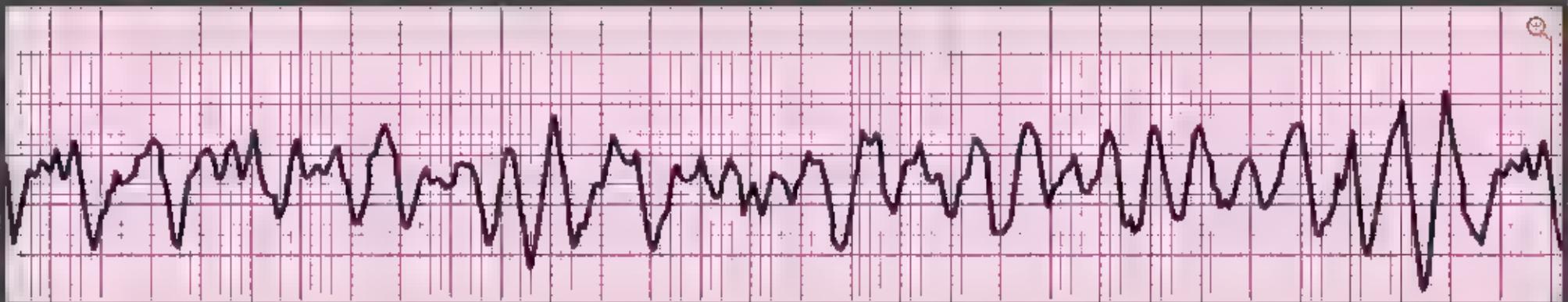
CHALLENGE JS

NEXT

1h 42m left

As Team Leader you conduct the primary assessment including rhythm analysis while High-quality BLS continues.

What type of rhythm is being displayed on the monitor?



CHOOSE THE CORRECT ANSWER

Aystole

Supraventricular tachycardia

Ventricular fibrillation

Ventricular tachycardia

KNOW IT

NOT ENOUGH

TRY AGAIN

NOT IDEA

642m left

Based on the patient's condition, what is your next action?



CHOOSE THE CORRECT ANSWER

Continue CPR while delivering a shock

Pause CPR to establish IV/IO access

Shock immediately

Continue CPR while you establish IV/IO access

UNKNOWN

UNKNOWN

UNKNOWN

UNKNOWN

After a shock is delivered, CPR resuscitation immediately.

What action also needs to be performed at this time?

CHOOSE THE CORRECT ANSWER

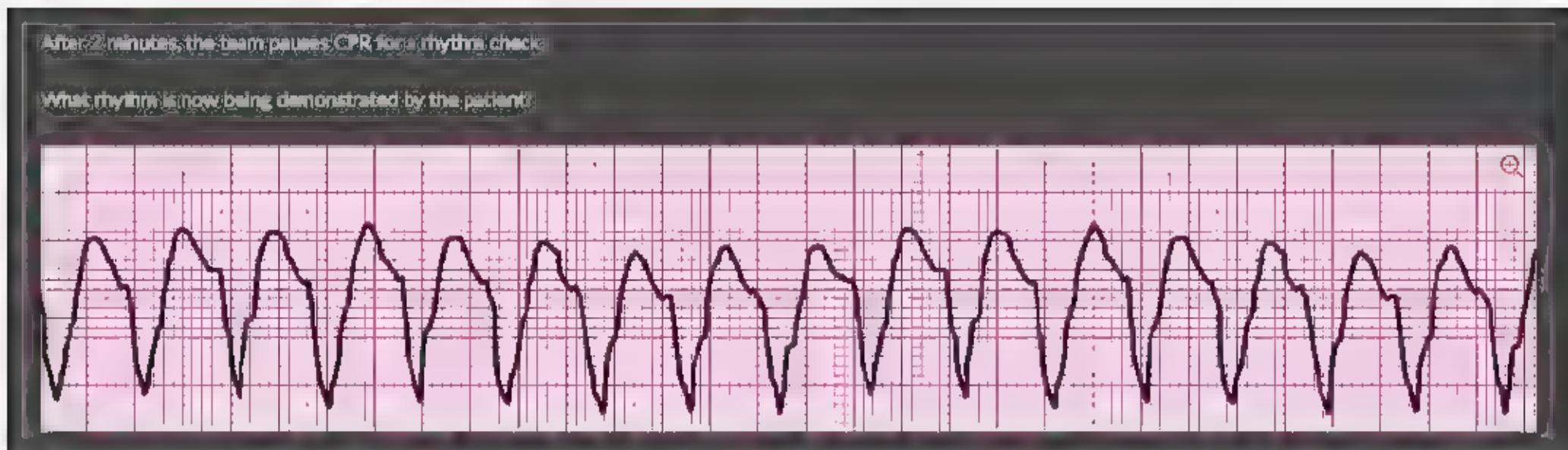
Perform a second rhythm check

Administer amiodarone or lidocaine

Consider an advanced airway

Establish IV/I/O access





CHOOSE THE CORRECT ANSWER

Asystole

Ventricular tachycardia

Pulseless electrical activity

Ventricular fibrillation

UNKNOWN

CHIROPRACTIC

OPTICAL

NO IDEA

The patient is showing persistent pulseless ventricular fibrillation (VF).

What actions need to be completed next by the team? (Place in the correct order)

RANK ITEMS BY DRUGGING AND DROPPING

Shock immediate y

Resume CPR

Administer epinephrine 1 mg IV

Consider an advanced airway

KNOW IT

UNKNOWN

NOT SURE

NO IDEA

At the next pulse check, compressors are switched, and rhythm continues to be refractory ventricular fibrillation/ventricular tachycardia. A shock is delivered and CPR is resumed.

What is your next intervention?



CHOOSE THE CORRECT ANSWER

Administer epinephrine 1 mg IV

Administer procainamide 15 to 18 mg/kg IV loading dose

Administer amiodarone 300 mg IV

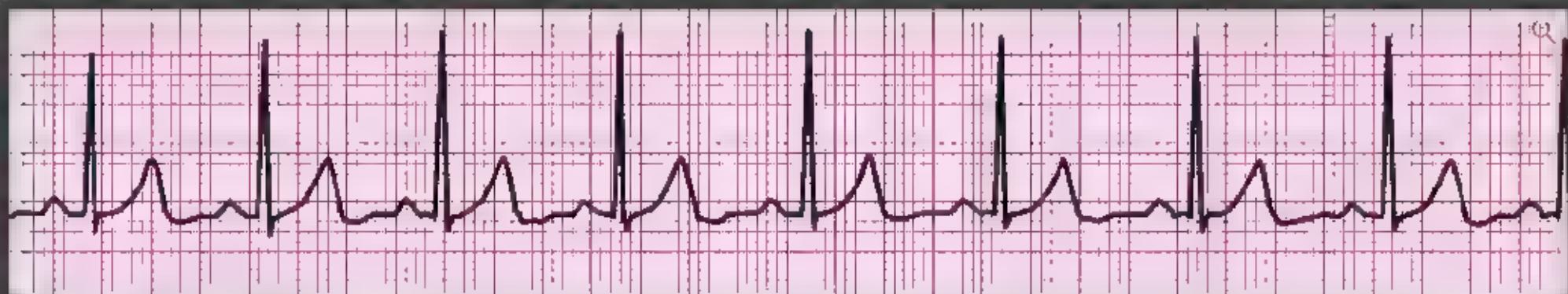
I KNOW IT

THINK I KNOW IT

NO IDEA

After 2 more minutes of CPR, you conduct a rhythm check and pulse check, confirming absence of a pulse.

Based on the organized rhythm below, describe the patient's condition.



CHOOSE THE CORRECT ANSWER

Normal sinus rhythm

Junctional rhythm

Sinus bradycardia

Pulseless electrical activity

UNKNOWN

UNKNOWN

UNKNOWN

UNKNOWN

One PEA is identified and there are no signs of ROSC; you continue CPR.

What is your next step for appropriate care for this patient?

CHOOSE THE CORRECT ANSWER

Administer epinephrine 1 mg IV

Administer amiodarone 300 mg IV

Administer amiodarone 150 mg IV

Administer epinephrine 1.5 mg IV

 **I KNOW!**

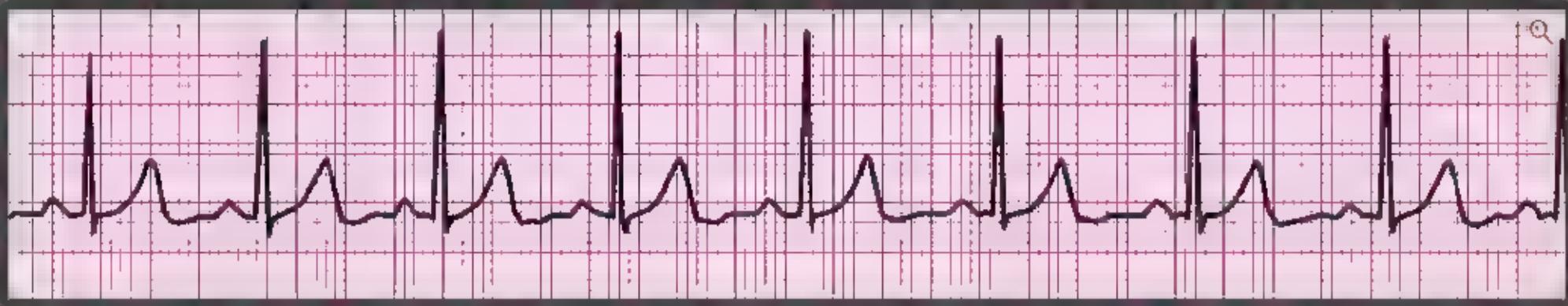
 **TRY AGAIN**

 **REVIEW**

 **NO IDEA**

After 2 minutes of CPR, you conduct another rhythm check and determine that the patient has the following rhythm, palpable pulse, and is showing signs of ROSC.

How do you continue treating this patient?



CHOOSE THE CORRECT ANSWER

Pause CPR and consider an advanced airway

Resume CPR and repeat the steps of the PEA pathway

Administer another dose of 1 mg of epinephrine

Move to the Adult Post-Cardiac Arrest Care Algorithm

UNKNOWN

UNKNOWN

UNKNOWN

NO IDEA



**Your score is: 100 %**

Congratulations! You successfully completed steps of the **Adult Cardiac Arrest Algorithm**.

Select **NEXT** to continue with the program

If you wish to review the questions, click on the question numbers above.

[Adult Cardiac Arrest Algorithm](#)

[Provider Manual](#)

CHALLENGE US

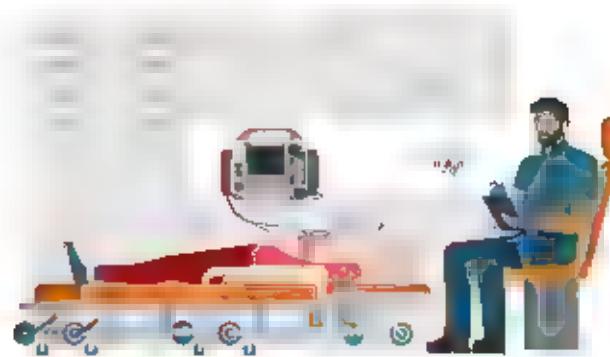
NEXT

93%

PROGRESS: HeartCode ACLS 2025

1h 28m left

TT Ahmed Othman



### Introduction

You are attempting to resuscitate a 70-year-old woman who suffered a sudden cardiac arrest. She is showing signs of return of spontaneous circulation (ROSC). She is intubated and has an IV established.

CHALLENGE US

NEXT

She has a palpable pulse, HR of 65/min,  $\text{SpO}_2$  of 94%,  $\text{ETCO}_2$  of 38 mm Hg, and BP 82/55 mm Hg.

What are your highest priorities?

SELECT ALL THAT APPLY

- Maintaining a target  $\text{PaCO}_2$  between 45 and 55 mm Hg
- Maintaining  $\text{SpO}_2$  92% to 98%
- Ventilating the patient with 10 breaths per minute
- Hyperventilation
- Maintaining a target  $\text{PaCO}_2$  between 35 and 45 mm Hg



In addition to managing the airway and respiratory parameters, which steps are also prioritized during the initial stabilization phase?

CHOOSE THE CORRECT ANSWER

Instituting targeted temperature management

Performing percutaneous coronary intervention

Treating hypotension

Administering a teplase

UNKNOWN

UNKNOWN

UNKNOWN

UNKNOWN

600ms heart

Match the treatment for hypotension to the proper initial dosage for an adult based on the AHA guidelines.



## MATCH ITEMS

Noradrenergic IV

0.1 to 0.5 mcg/kg per minute

Epinephrine

2 to 10 mcg per minute

Normal saline or lactated Ringers

1 to 2 L

Dopamine IV

5 to 20 mcg/kg per minute

KNOWLEDGE

SKILL

CONFIDENCE

NO IDEA

The patient's ventilation and blood pressure have responded to treatment.

What other lab or diagnostic tests would be appropriate to consider at this time for reversible causes?

SELECT ALL THAT APPLY

- Temperature
- Arterial blood carbon dioxide
- Arterial blood oxygen
- 12 lead ECG
- Capnography
- Troponin test

UNKNOWN

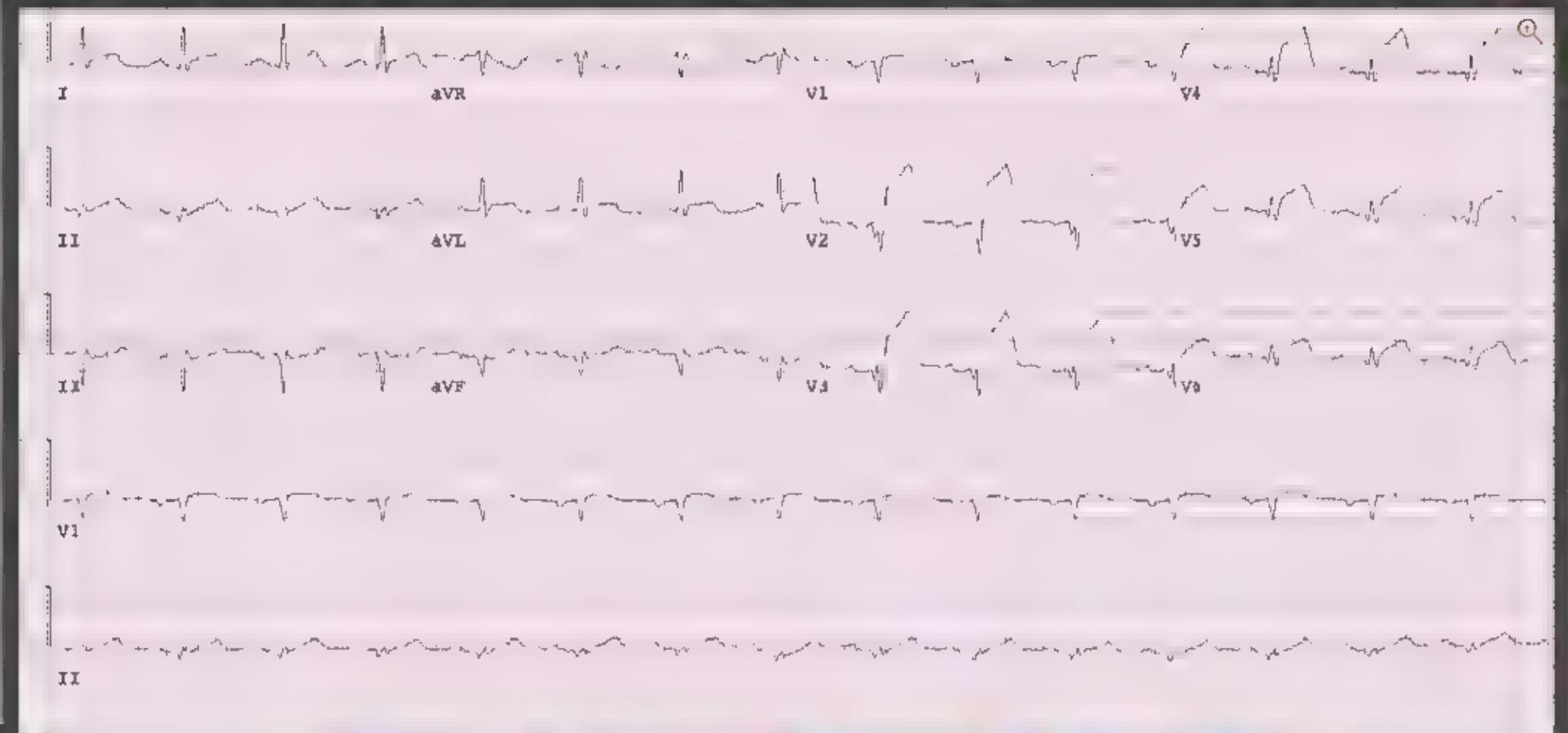
UNKNOWN

UNKNOWN

NO IDEAS

During transport, you obtain the following 12-lead ECGs you transmit the 12-lead ECGs to the hospital.

What will the emergency department physician most likely do when you arrive?

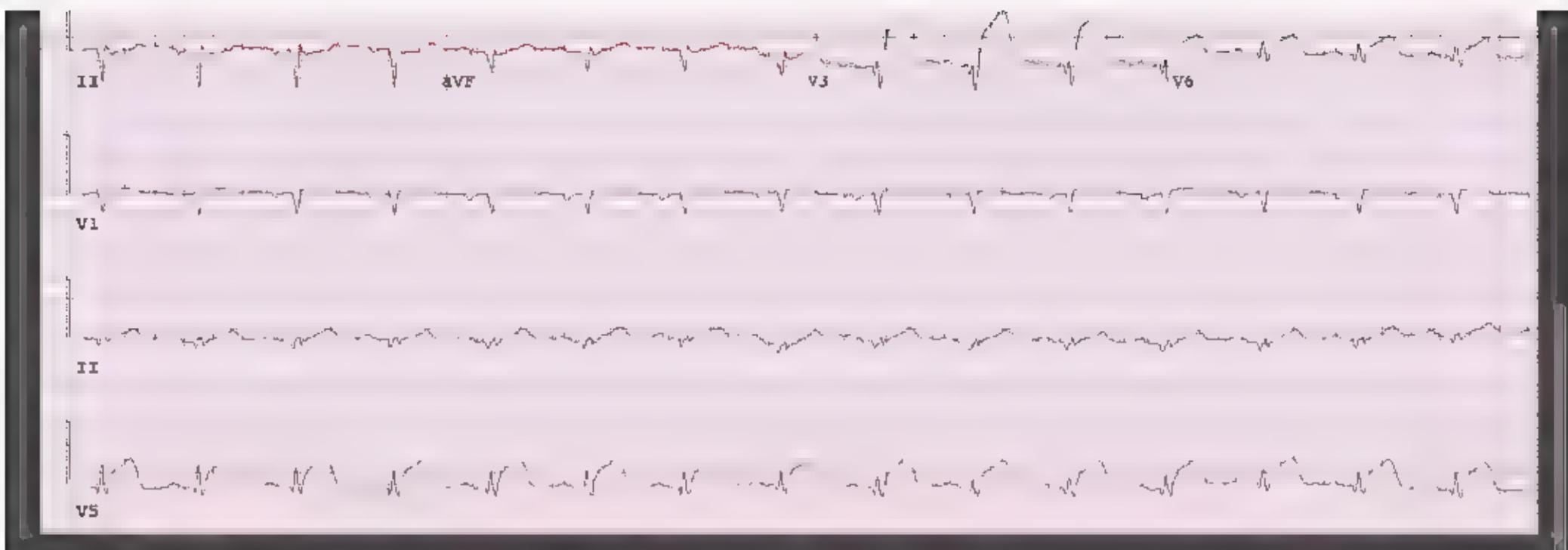


UNKNOWN

CONFIDENT

NOT SURE

NO IDEA



CHOOSE THE CORRECT ANSWER

Transfer the patient to an intensive care unit

Discharge the patient and have her follow up with her primary care provider

Observe the patient

Transfer the patient to a cardiac cath lab for percutaneous coronary intervention

KNOW IT

NOT SURE

NEED TO LEARN

NONDE

While you are giving a report to the hospital, the physician asks if the patient is able to follow verbal commands.

What intervention might be considered if the patient does not follow commands?

CHOOSE THE CORRECT ANSWER

Administering vasopressors

Transferring the patient to an intensive care unit

Targeted temperature management

Obtaining another ECG

UNKNOWN

THINK AGAIN

DON'T WORRY

NO IDEAS

93%

PROGRESS Hear Code ACLS 2025

1h 38m left

TT Ahmed Othman

**Your score is: 67%**

You will need to attempt completing the steps of the **Adult Post–Cardiac Arrest Care Algorithm** one more time.

Select **NEXT** to retry the questions you missed.

[Adult Post–Cardiac Arrest Care Algorithm](#)

[Provider Manual](#)

CHALLENGE US

NEXT

The patient has a palpable pulse, HR of 65/min, SpO<sub>2</sub> of 94%, ETCO<sub>2</sub> of 38 mm Hg, and BP 92/55 mm Hg.

What are your highest priorities?

SELECT ALL THAT APPLY

- Maintaining SpO<sub>2</sub> 92% to 98%
- Hyperventilation
- Ventilating the patient with 10 breaths per minute
- Maintaining a target PaCO<sub>2</sub> between 45 and 55 mm Hg
- Maintaining a target PaCO<sub>2</sub> between 35 and 45 mm Hg

KNOW IT

UNKNOWN

TRY IT

NO IDEA

She has a palpable pulse, HR of 65/min,  $\text{SpO}_2$  of 94%, ETCO<sub>2</sub> of 34 mm Hg, and BP 82/55 mm Hg.

What are your highest priorities?

You got it!

 Your Answer

Maintaining  $\text{SpO}_2$  92% to 98%

Ventilating the patient with 10 breaths per minute

 Algorithm

[Learn more](#)

 Your Answer

Maintaining a target  $\text{PaCO}_2$  between 35 and 45 mm Hg



KNOW IT

CHALLENGE US

NEXT

93%

PROGRESS HeartCode ACLS 2025

1h 33m left

TT Ahmed Othman

In addition to managing the airway and respiratory parameters, which step is also prioritized during the initial stabilization phase?

You got it!

Treating hypotension

Your  
Answer

Algorithm

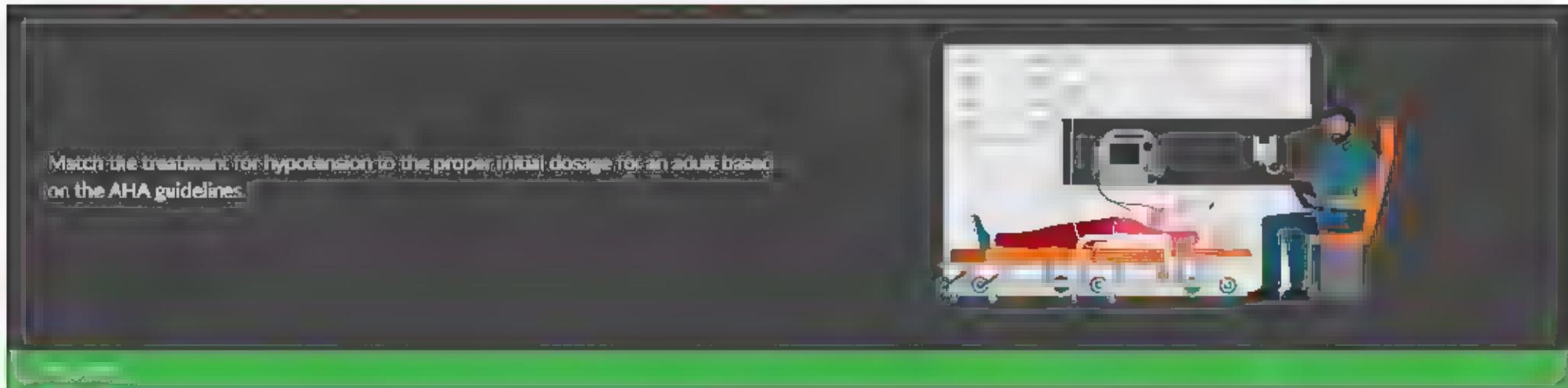
Learn more



Know it

CHALLENGE US

NEXT



Norepinephrine IV

WHY

✓ 0.1 to 0.5 mcg/kg per minute

Epinephrine

WHY

✓ 2 to 10 mcg per minute

Normal saline or lactated Ringers

WHY

✓ 1 to 2 L

Dopamine IV

WHY

✓ 5 to 20 mcg/kg per minute



Know it

CHALLENGE US

NEXT

The patient's ventilation and blood pressure have responded to treatment.

What other lab or diagnostic tests would be appropriate to consider at this time for reversible causes?

SELECT ALL THAT APPLY

Arterial blood oxygen

Troponin test

Arterial blood carbon dioxide

Temperature

Capnography

12-lead ECG



The patient's ventilation and blood pressure have responded to treatment.

What other lab or diagnostic tests would be appropriate to consider in this case for reversible causes?

Not there yet...

### 12 lead ECG

✓ Your Answer

(Algorithm)

Learn more

✓ Your Answer

Troponin test

✓ Your Answer

Temperature

✗ Your Answer

Arterial blood oxygen

Consider treating any reversible causes that might have precipitated the cardiac arrest but persist after ROSC, including a-Hs and T-s

✗ Your Answer

Arterial blood carbon dioxide

Consider treating any reversible causes that might have precipitated the cardiac arrest but persist after ROSC, including a-Hs and T-s

✗ Your Answer

Capnography

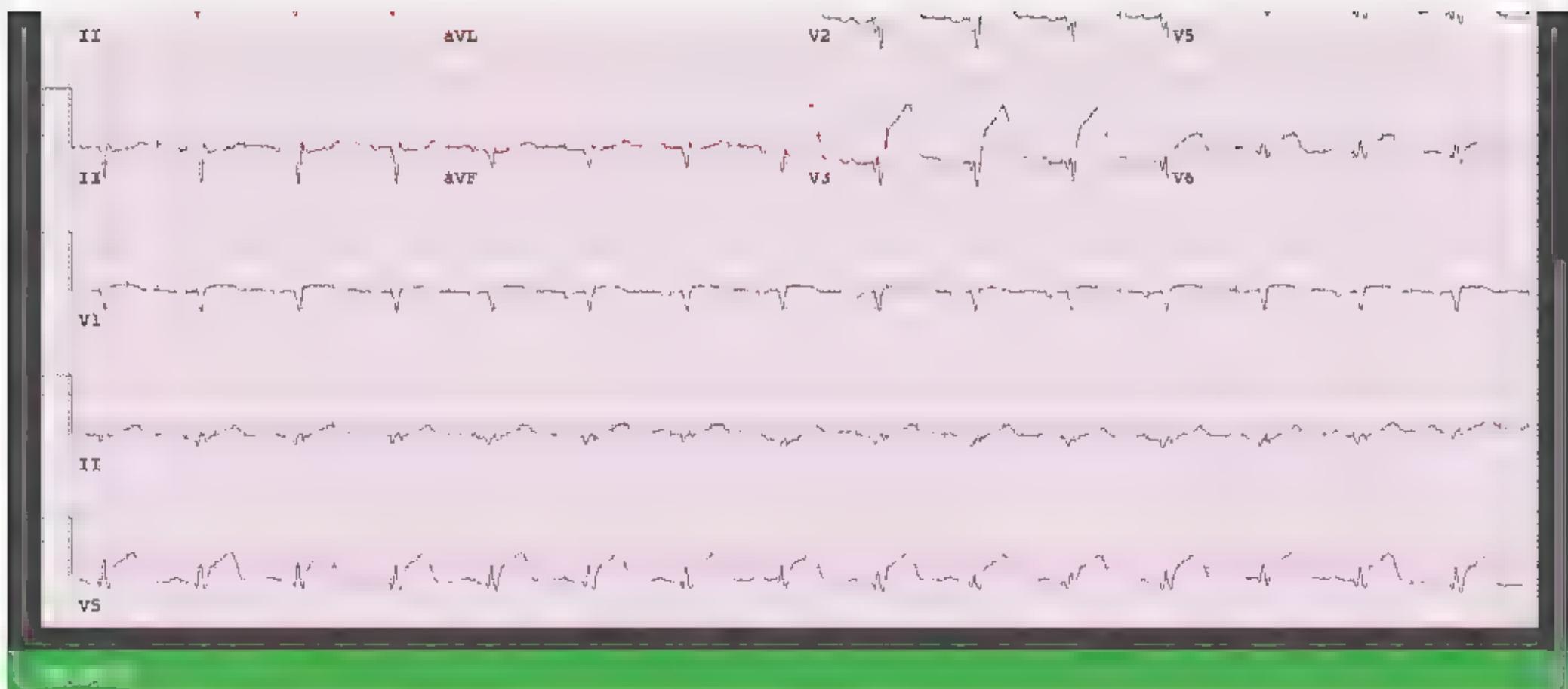
Consider treating any reversible causes that might have precipitated the cardiac arrest but persist after ROSC, including a-Hs and T-s



KNOW IT

CHALLENGE US

NEXT



Transfer the patient to a cardiac cath lab for percutaneous coronary intervention

Your  
Answer

[Algorithm]

Learn more

CHALLENGE US

NEXT



Know it

While you are giving a report to the hospital, the physician asks if the patient is able to follow verbal commands.

What intervention might be considered if the patient does not follow commands?

You got it!

Targeted temperature management

✓ Your Answer

Algorithm

Learn more



Know it

CHALLENGE US

NEXT



**Your score is: 100 %**

Congratulations! You successfully completed steps of the **Adult Post—Cardiac Arrest Care Algorithm**.

Select **NEXT** to continue with the program.

If you wish to review the questions, click on the question numbers above.

[Adult Post—Cardiac Arrest Care Algorithm](#)

[Provider Manual](#)

[CHALLENGE US](#)

[NEXT](#)

93%

PROGRESS: HeartCode ACLS 2025

1h41m left

TT Ahmed Othman

What is the recommended initial therapy for a patient with stable narrow-complex tachycardia, after establishing an IV and acquiring a 12-lead ECG?

CHOOSE THE CORRECT ANSWER

Card overision

Vaga manevers

$\beta$  Blockers

Adenosine

KNOW IT

NOT ENOUGH

NOT ENOUGH

NOT ENOUGH

93%

PROGRESS: HeartCode ACLS 2025

17:41m left

TT Ahmed Othman

What is the recommended initial therapy for a patient with stable narrow-complex tachycardia, after establishing an IV and acquiring a 12-lead ECG?

You got it!

 Your Answer

 Vagal maneuvers

 Know it

CHALLENGE US

NEXT

## REAL-TIME FEEDBACK ON CPR QUALITY

### CPR Performance Monitors

CPR performance monitors are now widely available, and they provide invaluable real-time feedback on the quality of CPR that rescuers deliver during resuscitative efforts. Physiologic end points are generally considered the best indicators of resuscitation effectiveness, but outside of a hospital setting, the only measure that is typically available is ETCO<sub>2</sub>. During CPR, ETCO<sub>2</sub> is a relative indicator of cardiac output and can also signal ROSC, so this should be used if possible.

#### Immediately available feedback:

- Chest compression rate
- Depth
- Recoil

#### Feedback for review:

- Chest compression fraction
- Preshock, perishock, and postshock pauses
- Feedback that cannot be assessed adequately
- Ventilation rate
- Airway pressure
- Tidal volume

## REAL-TIME FEEDBACK ON CPR QUALITY

efforts. Physiologic end points are generally considered the best indicators of resuscitation effectiveness, but outside of a hospital setting, the only measure that is typically available is ETCO<sub>2</sub>. During CPR, ETCO<sub>2</sub> is a relative indicator of cardiac output and can also signal ROSC, so this should be used if possible.

### Immediately available feedback

- Chest compression rate
- Depth
- Recoil

### Feedback for review

- Chest compression fraction
- Preshock, penshock, and postshock pauses
- Feedback duration must be assessed adequately
- Ventilation rate
- Airway pressure
- Tidal volume
- Inflation duration
- Other physiologic end points, if available (ie, ETCO<sub>2</sub>, intra-arterial blood pressure, cardiac ultrasound)

## REAL-TIME FEEDBACK ON CPR QUALITY

### Quantitative Waveform Capnography

The AHA recommends using waveform capnography with a bag-mask device to confirm and monitor CPR quality. For intubated patients use quantitative waveform capnography to monitor CPR quality, optimize chest compressions, and detect ROSC during chest compressions.

Although invasive monitors are usually not needed during CPR, physiologic parameters such as intra-arterial relaxation pressures and central venous oxygen saturation ( $\text{ScVO}_2$ ), may help optimize CPR and detect ROSC.

Animal and human studies indicate that monitoring  $\text{PETCO}_2$ , CPP and  $\text{ScVO}_2$  provides valuable information on the patient's condition and response to therapy. These physiologic parameters also correlate with cardiac output and myocardial blood flow during CPR, and when chest compressions fail to achieve identified threshold values the patient rarely achieves ROSC.

### End-Tidal $\text{CO}_2$

The main determinant of  $\text{PETCO}_2$  during CPR is blood delivery (cardiac output) to the lungs. Normal  $\text{PETCO}_2$  range is between 35 mm Hg and 45 mm Hg. Persistently low  $\text{PETCO}_2$  values less than 10 mm Hg during CPR in intubated patients suggest that ROSC is unlikely and it is reasonable to try to improve chest compressions and vasopressor therapy. If  $\text{PETCO}_2$  abruptly increases to a normal value of 35 to 40 mm Hg or higher, it is reasonable to consider this an indicator of ROSC.

PREVIOUS

1

2

3

NEXT

## REAL-TIME FEEDBACK ON CPR QUALITY



Physiologic Monitoring During CPR Examples



High quality compressions are shown through waveform capnography and intra arterial relaxation pressure

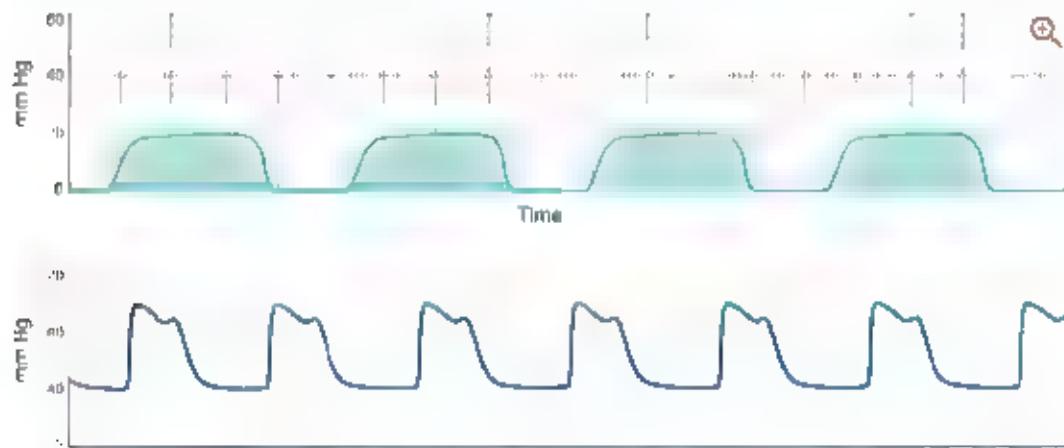


PREVIOUS 1 2 3

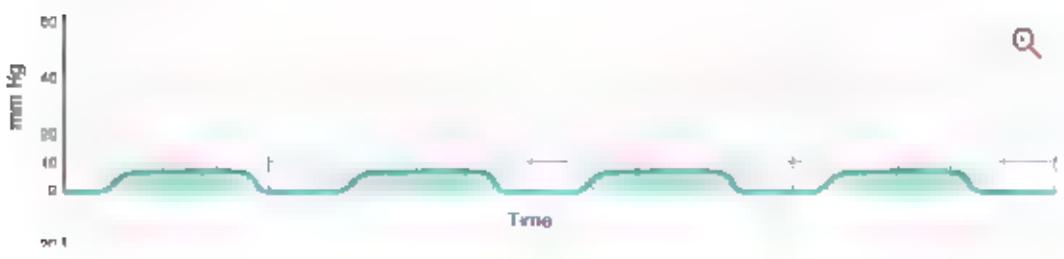


## REAL-TIME FEEDBACK ON CPR QUALITY

High quality compressions are shown through waveform capnography and intra arterial relaxation pressure



In this example, ineffective CPR compressions are shown through intra arterial relaxation pressure and waveform capnography



PREVIOUS 1 2  3

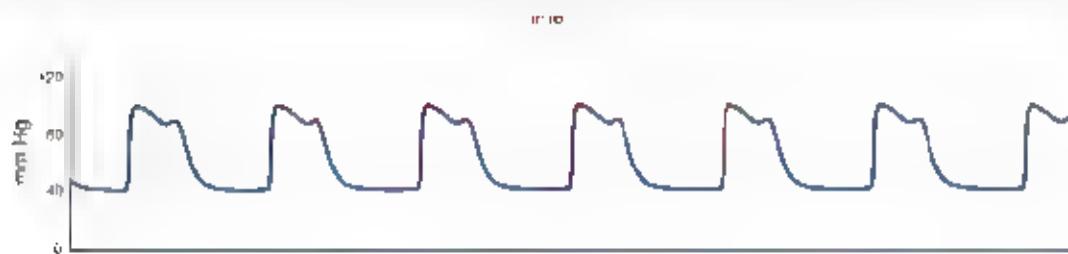
I KNEW

I TRIED

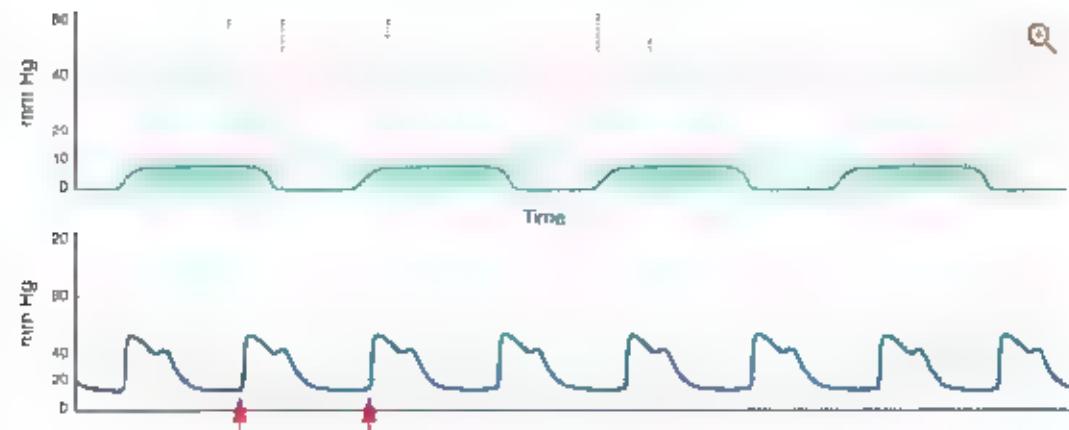
I DON'T

I DON'T CARE

## REAL-TIME FEEDBACK ON CPR QUALITY



In this example, ineffective CPR compressions are shown through intra arterial relaxation pressure and waveform capnography.



PREVIOUS

1

2

3

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

2h 35m left

Which of the following are immediately available as feedback from CPR performance monitors?

SELECT ALL THAT APPLY

- Compression recoil
- Ventilation rate
- Chest compression rate
- Chest compression fraction
- Compression depth



94%

PROGRESS HeartCode ACLS 2025

TT Ahmed Othman

Which of the following are immediately available as feedback from CPR performance monitors?

You got it!

Your Answer **Chest compression rate**

Your Answer **Compression depth**

Your Answer **Compression recoil**



Correct

CHALLENGE US

NEXT

What are some of the feedback functions of CPR performance monitors that are available for review during CPR?

SELECT ALL THAT APPLY

- Tidal volume
- Preshock, perishock, and postshock pauses
- Chest compression fraction
- Compress on recoil
- Compress on depth
- Chest compression rate

I KNOW IT    THINK I KNOW IT    NOT SURE    NO IDEA

What are some of the feedback functions of CPR performance monitors that are available for review during CPR?

Not these yet.

- ➡ Missed Answer **Compression recoil**  
This function is available during CPR
- ➡ Missed Answer **Compression depth**  
This function is available during CPR
- ➡ Missed Answer **Chest compression rate**  
This function is available during CPR
- ✖ Your Answer **Chest compression fraction**
- ✖ Your Answer **Preshock, perishock, and postshock pauses**
- ✖ Your Answer **Tidal volume**

Learn more here:  [Real-time Feedback on CPR Quality](#)



KNOW IT

CHALLENGE US



94%

PROGRESS: HeartCode ACLS 2025

1h 33m left

TT Ahmed Othman

What is the normal PETCO<sub>2</sub> range?

CHOOSE THE CORRECT ANSWER

25% to 35%

35 to 45 mm Hg

25 to 35 mm Hg

35% to 45%

94% PROGRESS HeartCode ACLS 2v25  
h 35m left

TT Ahmed Othman

What is the normal PETCO<sub>2</sub> range?

You got it!

✓ Your Answer

35 to 45 mm Hg



Know it

CHALLENGE US

NEXT

95%

PROGRESS: HeartCode ACLS 2025

2h 79m left

TT Ahmed Othman

What is the main determinant of end-tidal carbon dioxide (ETCO<sub>2</sub>) measurement during CPR?

CHOOSE THE CORRECT ANSWER

Blood delivery to the lungs

Assisted ventilation rate

Alveolar membrane permeability

Tidal volume

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

What is the main determinant of end-tidal carbon dioxide (EtCO<sub>2</sub>) measurement during CPR?

You got it!

✓ Your Answer

Blood delivery to the lungs

CHALLENGE US

NEXT

95%

PROGRESS HeartCode ACLS 2025

1h 29m left

TT Ahmed Othman

What is the only CPR performance monitor typically available for measuring a physiologic end-point outside of a hospital setting?

CHOOSE THE CORRECT ANSWER

Intra-arterial relaxation pressure

Cerebral perfusion pressure

End-tidal carbon dioxide (ETCO<sub>2</sub>)

Central venous oxygen saturation



95% PROGRESS: HeartCode ACLS 2025  
1h 29m left

TT Ahmed Othman

What is the only CPR performance monitor typically available for measuring physiologic endpoints outside of a hospital setting?

You got it!

✓ Your Answer

End-tidal carbon dioxide (ETCO<sub>2</sub>)



Know it

CHALLENGE US

NEXT

What invasive CPR performance measure reflects changes in cardiac output due to chest compressions, if oxygen consumption, arterial oxygen saturation and hemoglobin remain constant?

CHOOSE THE CORRECT ANSWER

Oxygen saturation by pulse oximetry

End-tidal carbon dioxide measure

Central venous oxygen saturation

Arterial relaxation pressure

UNKNOWN

UNKNOWN

UNKNOWN

NO IDEA

95%

PROGRESS HeartCode AC & 2025

1h 29m left

TT Ahmed Othman

What invasive CPR performance measure reflects changes in arterial output due to chest compressions? (e.g. arterial oxygen saturation and hemoglobin remain constant)

Not there yet...

 Your Answer

End-tidal carbon dioxide measure

Correct Answer

Central venous oxygen saturation

Learn more here:

Real-time Feedback on CPR Quality



Think So

CHALLENGE US

NEXT

95%

PROGRESS HeartCode ACLS 2025

1h 30m left

TT Ahmed Othman



## Introduction

Your advanced life support team is treating a 49-year old woman who says she's had chest discomfort and palpitations for the past several hours. She feels cold, sweaty, and weak.

CHALLENGE US

NEXT

When you walk in you find that the patient is awake and alert, sitting in her kitchen. You confirm that she has a pulse and is breathing normally. She states that she does not have any medical history and has never felt like this before. She mentions that she feels like she may pass out.



Which of the following are initial steps of the primary assessment?

SELECT ALL THAT APPLY

- Obtain a focused history
- Investigate H's and T's
- Monitor heart rhythm and vital signs
- Establish IV access
- Obtain a 12-lead electrocardiogram (ECG)
- Assess airway, breathing, and circulation (ABCs)





CHOOSE THE CORRECT ANSWER

Sinus bradycardia

Mobitz type I second-degree AV block

Mobitz type II second-degree AV block

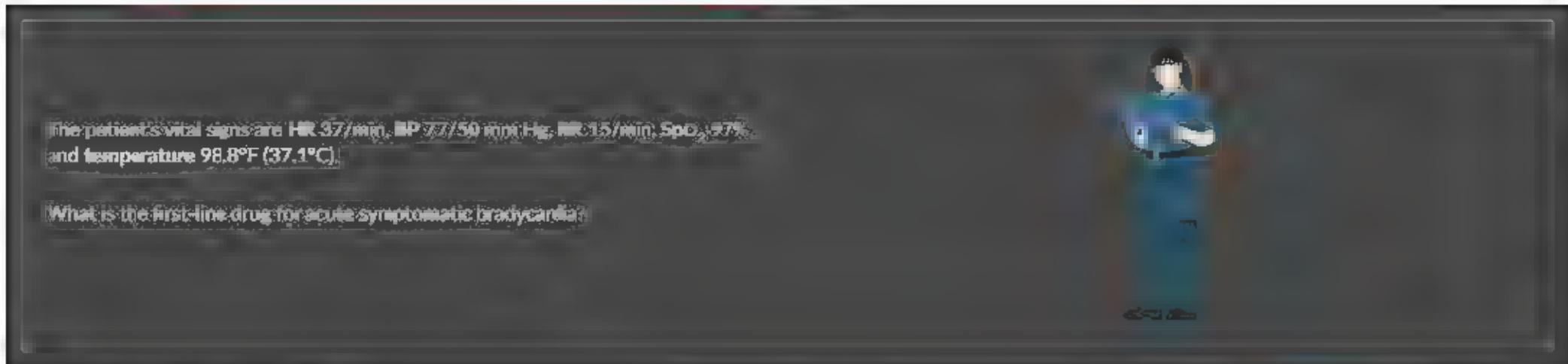
Atrial fibrillation

**KNOW IT**

**GET IT RIGHT**

**TRY IT**

**NO IDEA**



CHOOSE THE CORRECT ANSWER

Synchronized cardioversion

Epinephrine

Atropine

Monitoring and observing



You administer a bolus of atropine, which is ineffective. You prepare to initiate transcutaneous pacing.

What steps should be followed to start pacing?



SELECT ALL THAT APPLY

- Charge the defibrillator to 150 J
- Administer amiodarone infusion
- Ideally, administer a sedative and analgesic for conscious patients
- Attach pacing electrodes on the chest according to package instructions
- Set the current (milliamperes)
- Set the demand rate
- Turn the pacer on

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

95%

PROGRESS HeartCode ACLS 2025

1h 30m left

TT Ahmed Othman

What is an appropriate demand rate for the transcutaneous pacer?

CHOOSE THE CORRECT ANSWER

0 to 50/min

80 to 100/min

100 to 120/min

60 to 80/min

 KNOW IT

 GIVE IT A TRY

 LEARN MORE

 NO IDEAS

You initiated transcutaneous pacing but are unable to palpate a pulse that matches your electrical capture.

Do you have mechanical capture?



CHOOSE THE CORRECT ANSWER

No

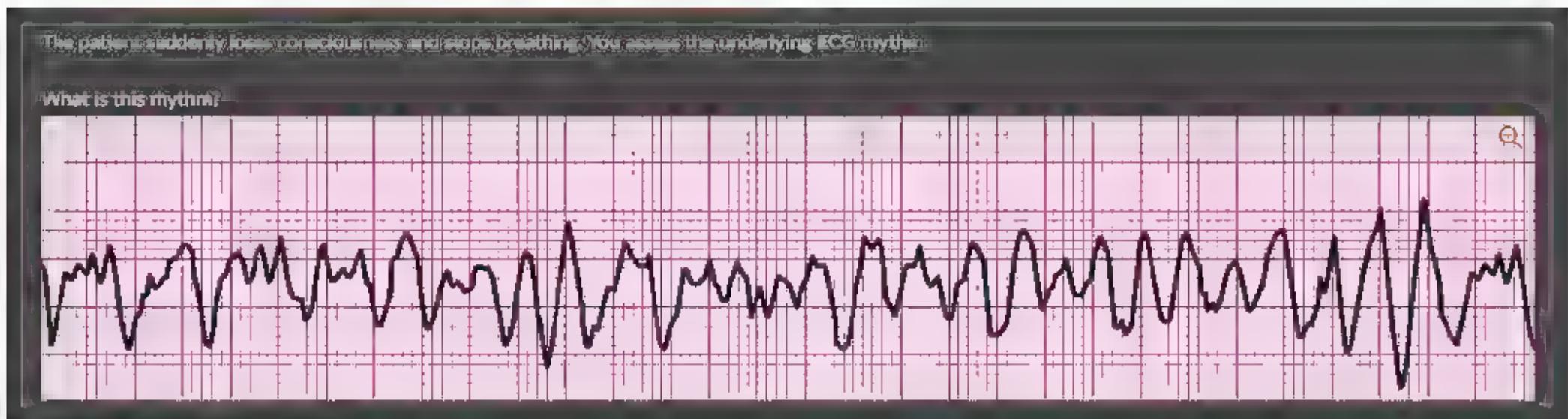
Yes

Not enough information

KNOW IT

LEARN MORE

NOT DEPENDABLE



CHOOSE THE CORRECT ANSWER

Ventricular fibrillation

Ventricular tachycardia

PEA

Asystole

KNOWN

UNKNOWN

INCORRECT

INCORRECT

95%

PROGRESS: HeartCode ACLS 2025

1h 30m left

TT Ahmed Othman

What is the most important next action for this patient?

CHOOSE THE CORRECT ANSWER

Intubate the patient

Deliver a shock

Immediately start high-quality CPR

Administer amiodarone

 **KNOW IT**

 **HEMORRHAGE**

 **VENTILATION**

 **NO IDEA**

The team started CPR immediately after delivering the shock. After 2 minutes, the rhythm was unchanged and a second shock was delivered.

What medication can be administered at this time?



CHOOSE THE CORRECT ANSWER

Epinephrine 3 mg

Atropine 1 mg IV

Amiodarone 100 mg IV

Epinephrine 1 mg IV



After securing the endotracheal tube, what ratio of compressions to ventilation should you deliver?



CHOOSE THE CORRECT ANSWER

Continuous compressions with 1 breath every 6 seconds

30 compressions to 2 ventilations

30 compressions with continuous ventilations

30 compressions to 1 ventilation

I KNOW IT

THINK I KNOW IT

NO IDEA

The patient remains in ventricular fibrillation after another 2 minutes of CPR.

What additional medication can you administer?

CHOOSE THE CORRECT ANSWER

Amiodarone 150 mg IV

Procainamide 10 mg IV

Amlodarone 300 mg IV

Epinephrine 4 mg IV

 **KNOW IT**

 **KNOW IT**

 **KNOW IT**

 **NO IDEA**

The patient is showing signs of return of spontaneous circulation (ROSC). She has a palpable pulse, HR 65/min, SpO<sub>2</sub> 74%, EtCO<sub>2</sub> 36 mm Hg, and BP 125/55 mm Hg.

Which are the highest-priority interventions per the Adult Post-Cardiac Arrest Care Algorithm?

SELECT ALL THAT APPLY

- Hyperventilation
- Maintaining a target PaCO<sub>2</sub> between 35 and 45 mm Hg
- Ventilating the patient with 6 breaths per minute
- Ventilating the patient with 10 breaths per minute
- Maintaining systolic blood pressure at least 100 mm Hg
- Maintaining SpO<sub>2</sub> 92% to 98%

KNOW IT

LEARN MORE

TRY IT

NO IDEA

In addition to ensuring the airway and respiratory airway, which step is also prioritized during the initial stabilization phase?

CHOOSE THE CORRECT ANSWER

Initiating targeted temperature management

Treating hypotension

Administering a thrombolytic

Performing percutaneous coronary intervention

UNKNOWN

UNKNOWN

UNKNOWN

NO IDEAS

**Your score is: 85%**

You will need to attempt completing the steps of the **Megacode** one more time.

Select **NEXT** to retry the questions you missed.

[Adult Bradycardia Algorithm](#)

[Adult Cardiac Arrest Algorithm](#)

[Adult Post-Cardiac Arrest Care Algorithm](#)

[Provider Manual](#)

CHALLENGE US

NEXT

When you walk in, you find that the patient is awake and alert, sitting in her kitchen. You confirm that she has a pulse and is breathing normally. She states that she does not have any medical history and has never felt like this before. She mentions that she feels like she may pass out.



Which of the following are initial steps of the primary assessment?

SELECT ALL THAT APPLY

- Establish IV access
- Obtain a 12-lead electrocardiogram (ECG)
- Monitor heart rhythm and vital signs
- Obtain a focused history
- Assess airway, breathing, and circulation (ABCs)
- Investigate H's and T's



When you walk in, you find that the patient is awake and alert, sitting in her kitchen. You confirm that she has a pulse and is breathing normally. She states that she does not have any medical history and has never felt like this before. She mentions that she feels like she may pass out.



Which of the following are initial steps of the primary assessment?

You got it!

Assess airway, breathing, and circulation (ABCs)

Your Answer

Algorithm

[Learn more](#)

Your Answer

Establish IV access

Your Answer

Obtain a 12-lead electrocardiogram (ECG)

Your Answer

Monitor heart rhythm and vital signs



Know it

CHALLENGE US

NEXT

The patient is placed on the heart monitor.

What is her heart rhythm?



✓ Your Answer

Mobitz type II second-degree AV block

Learn more



Know it

CHALLENGE US

NEXT

95%

PROGRESS: HeartCode ACLS 2025

1h 20m left

TT Ahmed Othman

The patient's vital signs are HR 37/min, BP 77/50 mm Hg, RR 15/min, SpO<sub>2</sub> 92%, and temperature 98.8°F (37.1°C).

What is the first-line drug to reverse symptomatic bradycardia?



ANSWER

Atropine

(Algorithm)

Learn more



Know it

CHALLENGE US

NEXT

You administer a single bolus of atropine, which is ineffective. You prepare to initiate transcutaneous pacing.

What steps should be followed to start pacing?



Attach pacing electrodes on the chest according to package instructions

Your Answer

**Algorithm**

[Learn more](#)

Your Answer

**Set the current (milliamperes)**

Your Answer

**Set the demand rate**

Your Answer

**Turn the pacer on**

Your Answer

**Ideally, administer a sedative and analgesic for conscious patients**



Know it

CHALLENGE US

NEXT

95%

PROGRESS HeartCode ACLS 2025

TT Ahmed Othman

What is an appropriate demand rate for the transcutaneous pacemaker?

You got it!

Your Answer

60 to 80/min  
[Learn more](#)



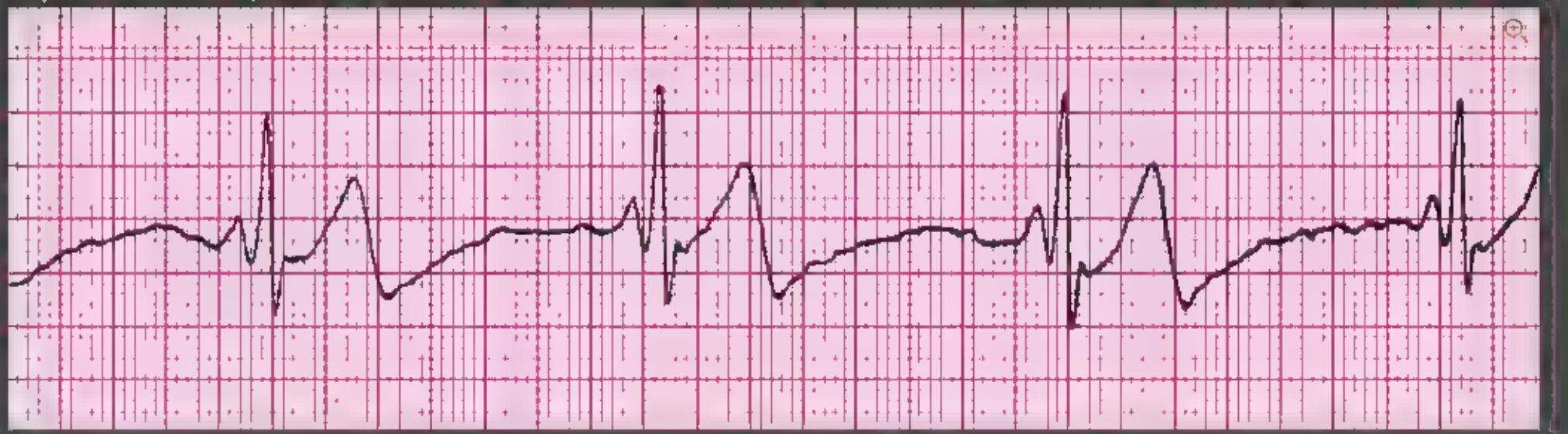
Know it

CHALLENGE JS

NEXT

You initiated transcutaneous pacing but are unable to palpate a pulse. Does this change your electrical capture?

Do you have mechanical capture?



CHOOSE THE CORRECT ANSWER

Not enough information

No

Yes

**KNOW IT**

**CHOOSE NEW**

**SEE IT**

**NO IDEA**

You initiated transcutaneous pacing but are unable to palpate a pulse that matches your electrical capture.

Do you have mechanical capture?



✓ Your  
Answer

No  
Learn more



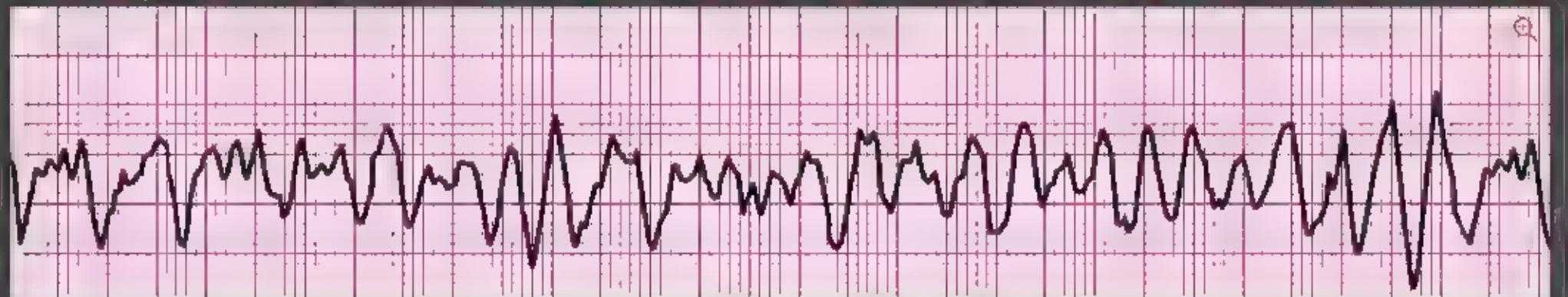
Know it

CHALLENGE US

NEXT

The patient suddenly loses consciousness and stops breathing. You assess the underlying ECG rhythm.

What is this rhythm?



✓ Your Answer

Ventricular fibrillation

Learn more



Know it

CHALLENGE US

NEXT

What is the most important next action for this patient?

You got it!

Deliver a shock

✓ Your Answer

Algorithm

Learn more



Know it

CHALLENGE US

NEXT

The team started CPR immediately after delivering the shock. After 2 minutes, the rhythm was unchanged and a second shock was delivered.

What medication can be administered at this time?



Epinephrine 1 mg IV

✓ Your Answer

(Algorithm)

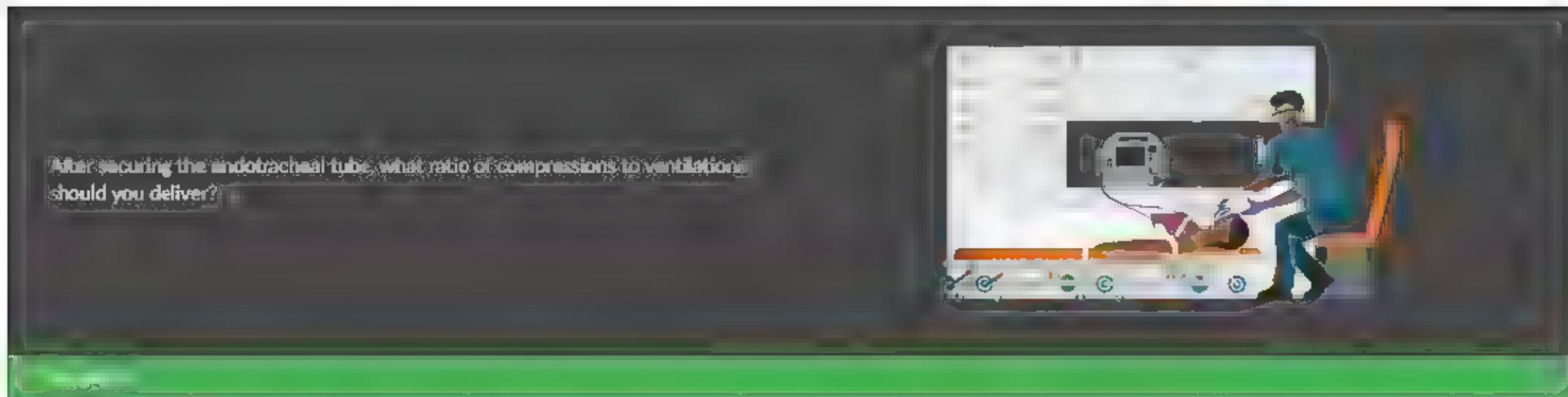
Learn more



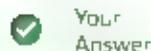
Know it

CHALLENGE US

NEXT



Continuous compressions with 1 breath every 6 seconds



Your Answer

Learn more

Algorithm

CHALLENGE US

NEXT



KNOW IT

The patient remains in ventricular fibrillation after three minutes of CPR.

What additional medication can you administer?

You got it!

Amiodarone 300 mg IV

✓ Your Answer

[Algorithm]

Learn more

CHALLENGE US

NEXT

The patient is showing signs of moderate hypoxemia (SpO<sub>2</sub> 74%). She has a palpable pulse, HR 65/min, SpO<sub>2</sub> 74%, EtCO<sub>2</sub> 38 mm Hg and BP 82/55 mm Hg.

Which of the following interventions would you consider using with this algorithm?

You got it!

Maintaining SpO<sub>2</sub> 92% to 98%

 Your Answer

 Algorithm

[Learn more](#)

 Your Answer

Ventilating the patient with 10 breaths per minute

 Your Answer

Maintaining a target PaCO<sub>2</sub> between 35 and 45 mm Hg



Know it

CHALLENGE US

NEXT

In addition to managing the airway and respiratory parameters, which step is also prioritized during the initial stabilization phase?

You got it!

Treating hypotension

✓ Your Answer

Algorithm

Learn more



Know it

CHALLENGE US

NEXT

**Your score is: 100 %**

Congratulations! You successfully completed steps of the Megacode.

Select **NEXT** to continue with the program.

If you wish to review the questions, click on the question numbers above.

[Adult Bradycardia Algorithm](#)

[Adult Cardiac Arrest Algorithm](#)

[Adult Post—Cardiac Arrest Care Algorithm](#)

[Provider Manual](#)

CHALLENGE US

NEXT

What are some of the feedback functions of CPR performance monitors that are available for review during CPR?

SELECT ALL THAT APPLY

- Feedback that cannot be assessed adequately
- Ventilation rate
- Chest compression rate
- Chest compression fraction
- Compression recoil
- Compression depth



What are some of the feedback functions or CPR performance monitors that are available for review during CPR?

You got it!

Your Answer

**Compression depth**

This function is available during CPR.

Your Answer

**Compression recoil**

This function is available during CPR.

Your Answer

**Chest compression rate**

This function is available during CPR.



Know it

CHALLENGE JS

NEXT

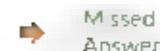
Which are examples of mutual respect?

Almost there!



Your Answer

Ensuring that only 1 person talks at a time



Missed Answer

Acknowledging correctly completed tasks in a positive way

Learn more here:

 How to Communicate



Know

CHALLENGE US

NEXT

Which alteration to the standard ACLS algorithm is appropriate for patients whose cardiac arrest is caused by hypothermia?

Not there yet...

 Your Answer

Increased medication doses

Correct Answer

Medications spaced at longer intervals

Learn more here:

VF/pVT in Accidental Hypothermia



Know it

CHALLENGE US

NEXT

What is an advantage of placing a post-cardiac arrest patient in a critical care bed after coronary reperfusion interventions?

Not there yet...

 Your Answer

Targeted temperature management occurs there

Correct Answer

Experts can perform timely neurologic evaluation

Learn more here:  Appropriate Destination for a Patient in the Post-Cardiac Arrest Period



Think So

CHALLENGE US

NEXT

**What is the main advantage of effective resuscitation?**

CHOOSE THE CORRECT ANSWER

Early defibrillation

Mastery of resuscitation skills

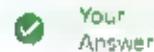
Immediate CPR

Division of tasks



What is the main advantage of effective teamwork?

You got it!



Your  
Answer

Division of tasks



TIME 5

CHALLENGE US

NEXT

Which therapy is not supported by evidence for use in patients with cardiac arrest secondary to hypothermia?

You got it!

 Your Answer

Antiarrhythmics



Think So

CHALLENGE US

NEXT

Which are examples of mutual respect?

You got it!

 Your Answer

| Ensuring that only 1 person talks at a time

 Your Answer

| Acknowledging correctly completed tasks in a positive way



I Know It

CHALLENGE US

NEXT

## IHCA SURVIVAL RATES

### IHCA Survival Rate

Mortality from IHCA remains high. Only about **1 in 4** patients survive an in-hospital cardiac arrest despite significant advances in treatments. Survival rates are particularly poor for IHCA associated with rhythms other than VF/pVT. Non-VF/pVT rhythms are present in the majority of arrests in the hospital.

When IHCA do occur, poor-quality CPR should be considered a preventable harm. In healthcare environments, clinician performance of CPR varies widely, affecting the ability to reduce healthcare-associated complications. Researchers advocate a standardized approach to improve outcomes and reduce preventable harms.

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



YOU GOT IT!

# WELL DONE!

YOU COMPLETED THIS MODULE

09:13:24



Total time spent

00:02:06



Spent per item



■ New items learned

■ Items already known

1 2 3 4

NEXT

TO DASHBOARD